BMW (2 in 1)
CODE READER & SERVICE RESET TOOL

INSTRUCTION MANUAL

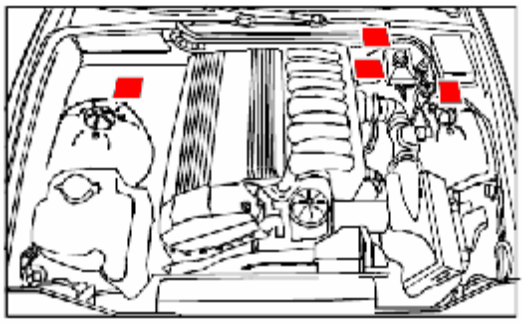
Ver 3.08

CONTENTS

1. *Diagnostic Connector Location:*

BMWs' built 1987 to year 2000

The 20 pin diagnostic connector is located in the engine compartment. The image shown below left gives a general idea of where the connector can be found depending on year and model and the picture show what the connector looks like.



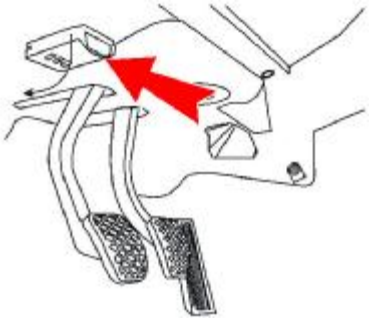
Areas marked red show the possible location of the diagnostic connector.

Uncovered 20 Pin Diagnostic connector

All BMWs built **1989 ~ 1999** have the above connector - no exceptions. Mid 2000 forward is when BMW began to phase out the above connector in favor of the "OBD II" connector (below).

BMW's built 2001 and Later (Connector Located inside the Car)

To locate the OBD II (16 Pins) Diagnostic Connector, open the driver's door, kneel down and look up at the underside of the dashboard. You will see the diagnostic connector near the pedals, above the driver's left leg (see illustration below.) Look for the rectangular access panel, (often embossed with the letters OBD) with a rounded thumb grip you will use to snap it off. The cover will swing downward revealing the 16 pin diagnostic connector inside.



Under the dashboard:

Access panel

Unable to locate the connector at the first instance?
Try looking on the passenger side of the center console, or to the left of the drivers left leg.
Note: A small number of 2001 and later models also have the 20 pin connector, such as the 2001- X5 and the Z3 up to 2003.

2. *Function:*

1. **LED** Display: Shows menu selections, activity and fault codes.
2. **Select** button: Used to review and select the available functions.
3. **OK** button: After using **Select** button to choose a function. The **OK** button causes the function to execute.

3. *Operation:*

1.) With the engine OFF, plug the tool into diagnostic connector. Ensure it is securely plugged in.

2.) Turn ignition key to ON position. (DO NOT START ENGINE)

3.) Tool is ready to use when it displays: 

4.) Use the "Select" button to select one of the functions as listed below:

5.) Press "OK" button to execute the function.

4. *Function Display Reference:*

Read Fault Code:

The tool automatically starts in this mode, (though it won't read the fault codes until the "OK" button is pressed). When OK is pressed, the unit will attempt to read the fault codes. If there are no faults it will display **--**

If it finds faults, it will automatically display the number of the code to use (see Error Code Tables). To then view the faults press OK, repeat until the end of the fault list - (tool will show **--**. Press OK to return to **Fc**)

Please take note:

- **The first number displayed is not a code!** After pressing "**OK**" button to read codes, the first number shown is the **code table** to use.
- **There is no code table FF.** BMWs built 1995 and earlier will not tell the tool which code table to use, so the tool just displayed **FF** (see page 7 for more details).

Clear Fault Codes and MIL Reset:

When you have selected **cE** in the display, you are now ready to reset the MIL "malfunction indicator lamp" (Resets "Check Engine" or "Service Engine Soon").
Pressing OK button will execute the reset.

When finished it will return to **Fc**. This clears all faults and extinguishes the MIL. To verify the reset, UNPLUG the tool and start the engine- MIL should be off.

*(**Note:** After a MIL reset on some models with Automatic Transmission, the Automatic Transmission Light will be on. To clear it, simply start the engine twice.)*

ENGINE LAMP WILL NOT RESET:

When the MIL is on, will not reset, yet no codes are found this can be caused by one of two things; most common: the car has automatic transmission related faults which can occasionally trigger an engine MIL. Another possible cause is the engine MIL circuit from the Engine ECU to the instrument cluster is open.

Oil Service Reset:

When you have selected **OL** in the display, it is ready to reset the "oil service" light. Pressing OK button will execute the reset. During the reset procedure the display will count from **0** to **2**. When it has finished, the display will return to **Fc**.

Inspection Reset:

When you have selected **In** in the display, you are now ready to reset the "inspection" light. Pressing OK button will execute reset. During the reset procedure the display will count from **0** to **9**. When it has finished the display will return to **Fc**.

WHEN SERVICE LIGHT RESET FAILS:

Commonly a reset was attempted before one of the Oil service or Inspection lights came on but the five green lights did not illuminate.

- The computer was counting down to a different service interval than the one you tried to reset.
- There is no way to know if the next light will be Oil service or Inspection.

Some BMWs will not reset prior to the illumination of the Oil service or the Inspection lights. In all cases we advise you to wait for the Oil service or Inspection light to come on before attempting a reset.

In other words, if there are any green “countdown” lights remaining; do not attempt a reset because it probably won’t work. Another cause of the service light not resetting is the tool type. If your BMW has the round diagnostic port under the hood, you can only reset the service lights through that round under- hood port.

SERVICE LIGHT BATTERY PROBLEMS: (note: only applies to BMWs older than 1989)

The Tool is not giving error messages and appears to be working normally but one of the following conditions occurs:

1. The reset seemed successful but the service lights come back on shortly after the reset was done.
2. The service lights stay on while the ignition is off and the key is out of the ignition switch.
3. The service lights flash off and on.
4. The service lights will not reset at all.
5. The tachometer, temperature gauge, or fuel economy gauge seem erratic (meter needle jumps rapidly) or have quit working completely.

The list of problems above indicates a dying or dead backup battery on your S.I. (Service Interval) computer circuit board. When this "backup" battery dies, the S.I. computer has to re-start every time you start your car, at which point an "Inspection" light will be indicated.

Winter storage without a trickle charger is the most common cause of premature S.I. battery failure. These specialized batteries have a life expectancy of approximately 4 to 7 years. Replacing the S.I. batteries takes about 90 minutes from start to finish and requires that you know how to operate a soldering iron.

TWIN ECU – 12 CYLINDERS:

FII and **CII** displays as shown apply only to 12 cylinder BMWs, all of which have two Engine ECU’s. It is the exact same operating procedure like **Fc** and **cE** (see above), except you are reading the 2nd ECU.

5. *1987 ~ 1995 BMW Models:*

If the tool displays “**FF**” for the table designator, note the year and model of the BMW (and the VDS number if necessary) and find the car in table A.

Note: VDS number is digit 4 thru 7 in the VIN: **WBABB23LAE68973**

Table A: “FF” Fault Codes Table Locator

YEAR	Model	VDS	Table
1987	325is	AA13	K1
	325is A	AA23	K1
	325i/4	AD13	K1
	325iA/4	AD23	K1
	325iC	BB13	K1
	325iCA	BB23	K1
1988	325is	AA13	K1
	325is A	AA23	K1
	325iX A/2	AB03	K1
	325/2	AB54	K1
	325 A/2	AB64	K1
	325iX/2	AB93	K1
	325i/4	AD13	K1
	325iA/4	AD23	K1
	325/4	AE54	K1
	325 A/4	AE64	K1
	325iC	BB13	K1
	325iCA	BB23	K1
	528e	DK73	K1
	528e A	DK83	K1
	635CSi	EC74	K1
	635CSi A	EC84	K1
	735i	GB33	K1
	735i A	GB43	K1
	735iL A	GC43	K1
	750iL A	GC83	K15
	M3		K1
1989	325i/is	AA13	K1
	325iA/2	AA23	K1
	325iX A/2	AB03	K1
	325iX/2	AB93	K1
	325i/4	AD13	K1
	325iA/4	AD23	K1
	325iX A/4	AE03	K1
	325iX/4	AE93	K1
	325iC	BB13	K1
	325iCA	BB23	K1
	525i	HC13	K1
	525i A	HC23	K1
	535i	HD13	K1
	535i A	HD23	K1

YEAR	Model	VDS	Table
1989	635CSi	EC74	K1
	635CSi A	EC84	K1
	735i	GB33	K1
	735i A	GB43	K1
	735iL A	GC43	K1
	750iL A	GC83	K15

	M3		**K1**
	M5		**K1**
1990	325i/is/2	AA13	**K1**
	325iA/2	AA23	**K1**
	325iX A/2	AB03	**K1**
	325iX/2	AB93	**K1**
	325i/4	AD13	**K1**
	325iA/4	AD23	**K1**
	325iX A/4	AE03	**K1**
	325iX/4	AE93	**K1**
	325iC	BB13	**K1**
	325iCA	BB23	**K1**
	525i	HC13	**K1**
	525i A	HC23	**K1**
	535i	HD13	**K1**
	535i A	HD23	**K1**
	735i	GB33	**K1**
	735i A	GB43	**K1**
	735iL A	GC43	**K1**
	750iL A	GC83	**K15**
	M3		**K1**
	M5		**K1**
1991	318is/2	AF93	**K13**
	318i/4	AJ93	**K13**
	318iC/2	BA73	**K13**
	325i/is/2	AA13	**K1**
	325iX A/2	AB03	**K1**
	325iX/2	AB93	**K1**
	325i/4	AD13	**K1**
	325iA/4	AD23	**K1**
	325iX A/4	AE03	**K1**
	325iX/4	AE93	**K1**
	325iC	BB13	**K1**
	325iCA	BB23	**K1**
	525i	HD53	**K10**
	525i A	HD63	**K10**
	535i	HD13	**K1**
	535i A	HD23	**K1**
	735i A	GB43	**K1**
	735iL A	GC43	**K1**
	750iL A	GC83	**K7**

YEAR	**Model**	**VDS**	**Table**
1991	850i	EG13	**K7**
	850i A	EG23	**K7**
	M5	HD93	**K1**
	M3		**K1**
1992	318iC/2	BA73	**K13**

	318is	BE53	**K6**
	318i	CA53	**K6**
	325iC	BB13	**K1**
	325iCA	BB23	**K1**
	325is	BF33	**K10**
	325is A	BF43	**K10**
	325i	CB33	**K10**
	325i A	CB43	**K10**
	525i	HD53	**K10**
	525i A	HD63	**K10**
	525iT	HJ63	**K1**
	535i	HD13	**K1**
	535i A	HD23	**K1**
	735i A	GB43	**K1**
	735iL A	GC43	**K1**
	750iL A	GC83	**K7**
	850i	EG13	**K7**
	850i A	EG23	**K7**
	M3		**K1**
	M5	HD93	**K10**
1993	318is	BE53	**K6**
	318is A	BE63	**K6**
	318i	CA53	**K6**
	318i A	CA63	**K6**
	325iC	BB13	**K1**
	325iCA	BB23	**K1**
	325is	BF33	**K5**
	325is A	BF43	**K5**
	325i	CB33	**K5**
	325i A	CB43	**K5**
	525i	HD53	**K5**
	525i A	HD63	**K5**
	525iT	HJ63	**K5**
	535i	HD13	**K1**
	535i A	HD23	**K1**
	740i A	GD43	**K11**
	740iL A	GD83	**K11**
	750iL A	GC83	**K7**
	850i	EG13	**K7**
	850i A	EG23	**K7**
	M3		**K5**
	M5	HD93	**K1**

YEAR	**Model**	**VDS**	**Table**
1994	318is	BE53	**K6**
	318is A	BE63	**K6**
	318iC	BK53	**K6**
	318iC A	BK63	**K6**
	318i	CA53	**K6**
	318i A	CA63	**K6**

	325is	BF33	**K5**
	325is A	BF43	**K5**
	325iC	BJ53	**K5**
	325iCA	BJ63	**K5**
	325i	CB33	**K5**
	325i A	CB43	**K5**
	525i	HD53	**K5**
	525i A	HD63	**K5**
	525iT	HJ63	**K5**
	530i	HE13	**K11**
	530i A	HE23	**K11**
	530iT A	HK23	**K11**
	540i A	HE63	**K11**
	740i A	GD43	**K11**
	740iL A	GD83	**K11**
	750iL A	GC83	**K7**
	840Ci A	EF63	**K11**
	850i A	EG23	**K7**
	850CSi	EG93	**K7**
1995	318is	BE53	**K6**
	318is A	BE63	**K6**
	318iC	BK53	**K6**
	318iC A	BK63	**K6**
	318i	CA53	**K6**
	318i A	CA63	**K6**
	318i	CC73	**K6**
	318i A	CC83	**K6**
	318ti	CG53	**K6**
	318ti A	CG63	**K6**
	325is	BF33	**K5**
	325is A	BF43	**K5**
	325iC	BJ53	**K5**
	325iCA	BJ63	**K5**
	325i	CB33	**K5**
	325i A	CB43	**K5**
	525i	HD53	**K5**
	525i A	HD63	**K5**
	530i	HE13	**K11**
	530i A	HE23	**K11**
	540i	HE53	**K11**
	540i A	HE63	**K11**
	525iT	HJ63	**K5**
	530iT A	HK23	**K11**

YEAR	**Model**	**VDS**	**Table**
1995	740i A	GF63	**K11**
	740iL A	GJ63	**K11**
	750iL A	GK23	**K12**
	840Ci A	EF63	**K11**
	850Ci A	EG43	**K12**
	850CSi	EG93	**K7**

M3	BF93	**K5**
M3 A	BF03	**K5**

A Note about non-U.S. BMWS:

The above vehicle reference refers to US specification BMWs only, and does not include any non-US BMW variants. To best use the tool on your non-US BMW, you will need to determine which of the above most closely matches your BMW.

For instance a 1991-320i is a 3 series, four cylinders, made for non-US markets:
In this case, the best table for you to use would be table K13, as the closest US spec car would be a 1991-318i (which is also a 4cyl, 3 series) This method doesn't always work, you may need to experiment to find the correct table.

Use these CODE Definitions WISELY:

The code definitions contained in this manual should be regarded as a starting point for diagnosing a problem. The codes that your BMW generates can be misleading. There may also be errors in this manual. Before spending your money on a repair or replacement parts, make sure you have a clear understanding of the problem by using additional sources of information, such as a good quality repair manual, expert advice, the Internet, etc...

Note: Unfortunately, we are not staffed to answer your questions about codes, diagnostics, or BMW problems or offer repair advice. We apologize for any inconvenience this may cause.

6. "FF" CODE TABLES (for 1987 ~ 1995 BMW MODELS):

Table K1

1	DME control unit selftest
3	Electrical fuel pump relay
4	Idle speed actuator (open)
5	Evaporative purge control valve
7	Air flow meter
10	Fuel Injectors (Cyl. 1, 3, 5)
11	Fuel Injectors (Cyl. 2, 4, 6)
16	Idle speed actuator (close)
17	Oxy sensor heating relay
21	AT kick-down prevent solenoid valve
25	Control unit supply
26	Automatic Stability Control / DWA
28	A/C Compressor
32	Engine drag torque control (MSR)
33	Ignition timing intervention
34	Idle switch
35	Full load switch
36	Torque Converter Clutch
64	Unspecified DME Output Stage
0A	Emission (lambda) control
0F	Check engine lamp
1c	Oxy sensor
1d	Vehicle speed signal not present
2b	Idle CO Potentiometer
2c	Intake air temperature sensor
2d	Coolant temperature sensor

Table K5

1	Electrical fuel pump relay
2	Idle speed actuator (close)
3	Fuel Injector, Cyl #5
4	Fuel Injector, Cyl #6
5	Fuel Injector, Cyl #4
6	Fuel Injector, Unknown
7	VANOS (Solenoid)
8	Check engine lamp
10	Crankshaft sensor
11	Camshaft sensor

17	Ignition Coil, Cyl #4
18	Ignition Coil, Cyl #6
19	Ignition Coil, Cyl #5
20	Fuel Injector, Cyl #2
21	Fuel Injector, Cyl #1
24	Evaporative purge control valve
26	Oxy sensor heating relay
29	Air mass sensor
30	A/C Compressor control
32	Ignition Coil, Cyl #1
33	Ignition Coil, Cyl #2
34	Ignition Coil, Cyl #3
36	Battery voltage / DME main relay
37	Misfire, Cyl #6
39	Ignition timing intervention
41	A/C Compressor
42	DWA/EWS Input
45	Knock Sensor, Cyl 4-6
46	Knock Sensor, Cyl 1-3
49	Throttle position sensor
52	Intervention, MSR
53	Intervention, ASC
64	Output Stage, Group #1
0d	Oxy sensor
0F	Ignition secondary monitor
1A	Control unit supply
1d	Idle speed actuator (open)
1F	Fuel Injector, Cyl #3
2A	Vehicle speed signal not present
4c	Idle CO Potentiometer
4d	Intake air temperature sensor
4E	Coolant temperature sensor
cA	Fault code memory error
cc	Idle speed increase during MSR
cE	Knock control test pulse
c8	DME Control Unit
c9	Lambda Control #1
dc	EWS message

Table K6

1	Electrical fuel pump relay
3	Fuel Injectors (Cyl 2, 4)
8	Check engine lamp
10	Camshaft/Cylinder ID sensor
12	Intake air resonance (DISA) valve
20	Fuel Injectors (Cyl 1, 3)
24	Evaporative purge control valve
25	Oxy sensor heating relay
29	Air flow sensor
30	A/C Compressor control
36	Control unit supply
37	Ignition coils
40	Ignition timing intervention
46	Oxy sensor
49	Vehicle speed signal not present
51	DWA/EWS input
55	A/C Compressor
64	Unspecified DME Output Stage
0c	Throttle position sensor
0F	Knock sensor, Cyl 1-2
1d	Idle Control Valve
2A	Knock sensor, Cyl 3-4
4c	Idle CO Potentiometer
4d	Intake air temperature sensor
4E	Coolant temperature sensor
c8	DME control unit selftest
c9	Emission (lambda) control
cE	Knock control test pulse
cF	Knock control regulation
dc	EWS message

Table K7

1	Electrical fuel pump relay
3	Fuel Injectors (Cyl 2, 4, 6 or 8, 10, 12)
8	Check engine lamp
10	Camshaft/Cylinder ID sensor
20	Fuel Injectors (Cyl 1, 3, 5 or 7, 9, 11)
24	Evaporative purge control valve
25	Oxy sensor heating relay
29	Air flow sensor
30	A/C Compressor control
36	Control unit supply
40	Ignition timing intervention
46	Oxy sensor

49	Vehicle speed signal not present
52	Engine drag torque control (MSR)
53	ASC / ZAB
64	Unspecified DME Output Stage
3F	Torque converter clutch
4c	Idle CO Potentiometer
4d	Intake air temperature sensor
4E	Coolant temperature sensor
c8	DME control unit selftest
c9	Emission (lambda) control

Table K10

1	Electrical fuel pump relay
2	Idle speed actuator (close)
3	Fuel Injector, Cyl #1
4	Fuel Injector, Cyl #3
5	Fuel Injector, Cyl #2
6	Fuel Injector, Unknown
8	Check engine lamp
10	Camshaft sensor
12	Output Stage, Group #1
13	Output Stage, Group #2
17	Ignition Coil, Cyl #2
18	Ignition Coil, Cyl #3
19	Ignition Coil, Cyl #1
20	Fuel Injector, Cyl #6
21	Fuel Injector, Cyl #4
24	Evaporative purge control valve
25	Oxy sensor heating relay
29	Air mass sensor
30	A/C Compressor control
32	Ignition Coil, Cyl #4
33	Ignition Coil, Cyl #6
34	Ignition Coil, Cyl #5
36	Battery voltage / DME main relay
37	Ignition output stage
40	Ignition timing intervention
43	Crankshaft sensor
46	Oxy sensor
49	Vehicle speed signal not present
51	DWA Input
52	Engine drag torque control (MSR)
53	Intervention, ASC
55	A/C Compressor
64	Output Stage
0c	Throttle position sensor
1A	Control unit supply
1d	Idle speed actuator (open)
1F	Fuel Injector, Cyl #5
2E	Output Stage
3E	EML Signal
3F	Torque converter clutch lockup
4c	Idle CO Potentiometer
4d	Intake air temperature sensor
4E	Coolant temperature sensor
c8	DME Control Unit
c9	Lambda Control
cA	Fault code memory error
cb	Ignition circuit primary monitor
cc	Stall protection

Table K11

1	Electrical fuel pump relay
2	Idle speed actuator (close)
3	Fuel Injector, Cyl #1
4	Fuel Injector, Cyl #4
5	Fuel Injector, Cyl #6
6	Fuel Injector, Unknown
7	Fuel Injector, Cyl #7
8	Check engine lamp
10	Crankshaft sensor
11	Camshaft sensor
13	Secondary air pump relay
16	Ignition Coil, Cyl #7
17	Ignition Coil, Cyl #6
18	Ignition Coil, Cyl #4

19	Ignition Coil, Cyl #1
20	Fuel Injector, Cyl #8
21	Fuel Injector, Cyl #3
23	Fuel Injector, Cyl #2
24	Evaporative purge control valve
25	Oxy sensor heating relay
29	Air mass sensor
30	A/C Compressor control
31	Ignition Coil, Cyl #2
32	Ignition Coil, Cyl #3
33	Ignition Coil, Cyl #8
34	Ignition Coil, Cyl #5
36	Battery voltage / DME main relay
41	A/C Compressor
42	DWA/EWS Input
43	Knock Sensor, Cyl 7-8
44	Knock Sensor, Cyl 5-6
45	Knock Sensor, Cyl 3-4
46	Knock Sensor, Cyl 1-2
49	Throttle position sensor
52	Intervention, MSR
53	Intervention, ASC
64	Output Stage, Group #1
65	Output Stage, Group #2
0c	Oxy sensor, #2
0d	Oxy sensor, #1
0F	Ignition secondary monitor
1A	Control unit supply
1d	Idle speed actuator (open)
1F	Fuel Injector, Cyl #5
2A	Vehicle speed signal not present
3E	EML Signal
4c	Idle CO Potentiometer
4d	Intake air temperature sensor
4E	Coolant temperature sensor
c8	DME Control Unit
c9	Lambda Control #1
cA	Fault code memory error
cb	Lambda Control #2
cc	Idle speed increase - CAN Bus
cd	Ignition timing intervention
cE	Knock control test pulse
d2	CAN message
dc	EWS message

Table K12

4	PreCat oxy sensor heater, Bank 2
5	AfterCat oxy sensor heater, Bank 2
8	Misfire w/ low fuel
10	PreCat oxy sensor aging, Bank 1
11	AfterCat oxy sensor response time, Bank 1
12	PreCat oxy sensor, Bank 2
14	AfterCat oxy sensor, Bank 2
15	PreCat oxy sensor response time, Bank 2
16	PreCat oxy sensor aging, Bank 2
17	AfterCat oxy sensor response time, Bank 2
18	A/C Compressor
20	Idle control valve stuck mechanically
22	Fuel trim, multiplicative, Bank 2
23	Fuel trim, QL additive, Bank 2
46	Misfire, catalyst damaging, Cyl #8
47	Misfire, catalyst damaging, Cyl #9
48	Misfire, catalyst damaging, Cyl #10
49	Misfire, catalyst damaging, Cyl #11
50	Secondary air control, Bank 1
54	Secondary air pump final stage
55	Secondary air valve final stage
61	EVAP small leak
62	EVAP purge control valve circuit
24	Fuel trim, Ti additive, Bank 2
27	EWS message
28	Catalyst efficiency, Bank 1
32	Misfire, Cyl #1
33	Misfire, Cyl #2
34	Misfire, Cyl #3
35	Misfire, Cyl #4
36	Misfire, Cyl #5
37	Misfire, Cyl #6
38	Misfire, Cyl #7
39	Misfire, Cyl #8
40	Misfire, catalyst damaging, Cyl #2
41	Misfire, catalyst damaging, Cyl #3
42	Misfire, catalyst damaging, Cyl #4
43	Misfire, catalyst damaging, Cyl #5
44	Misfire, catalyst damaging, Cyl #6
45	Misfire, catalyst damaging, Cyl #7
65	DME, internal RAM failure
66	DME, external RAM failure
67	DME, ROM failure
68	Fault code memory error
70	Camshaft position sensor
73	Air mass sensor
75	Throttle position sensor
78	Vehicle speed signal not present
79	Load calculation crosscheck (HFM vs.

	TPS)
87	Torque reduction: Transmission
90	Intervention, ASC
93	Electric thermostat control performance
94	EWS Input
96	Fuel Injector, Cyl #1
97	Fuel Injector, Cyl #2
98	Fuel Injector, Cyl #3
99	Fuel Injector, Cyl #4
0A	PreCat oxy sensor, Bank 1
0C	AfterCat oxy sensor, Bank 1
0d	PreCat oxy sensor heater, Bank 1
0E	AfterCat oxy sensor heater, Bank 1
0F	PreCat oxy sensor response time, Bank 1
1A	Fuel trim, multiplicative, Bank 1
1b	Fuel trim, QL additive, Bank 1
1C	Fuel trim, Ti additive, Bank 1
2d	Catalyst efficiency, Bank 2
3A	Misfire, Cyl #9
3b	Misfire, Cyl #10
3C	Misfire, Cyl #11
3d	Misfire, Cyl #12
3E	Misfire, random or unknown cylinder
3F	Misfire, catalyst damaging, Cyl #1
4A	Misfire, catalyst damaging, Cyl #12
4b	Misfire detected, catalyst damaging, random/unknown Cyl.
4E	Crankshaft position sensor (too many teeth)
5d	EVAP emission control system
5E	EVAP large leak
6b	Control unit supply voltage
6c	Battery disconnected
6F	Crankshaft position sensor
7b	Coolant temperature sensor
7c	Intake air temperature sensor
8A	A/C Compressor torque reduction
8b	Electric thermostat control final stage
8d	ASC signal plausibility
8F	Intervention, MSR
9A	Fuel Injector, Cyl #5
9b	Fuel Injector, Cyl #6
9c	Fuel Injector, Cyl #7
9d	Fuel Injector, Cyl #8
9E	Fuel Injector, Cyl #9
9F	Fuel Injector, Cyl #10
A0	Fuel Injector, Cyl #11
A1	Fuel Injector, Cyl #12
A5	Check engine lamp
A7	Electrical fuel pump relay
A8	Idle speed actuator (open)
A9	Idle speed actuator (close)
AA	A/C Compressor control
d0	Secondary air control, Bank 2
d2	Knock Sensor #1
d3	Knock Sensor #2
d4	Knock Sensor #3
d5	Knock Sensor #4
d8	CAN timeout, ASC
dc	Knock control test pulse
dE	Knock control test pulse
EA	Automatic start input
Ec	CAN timeout, EGS
Ed	Automatic start output
Fd	Coolant fan final stage

Table K13

1	Electrical fuel pump relay
3	Fuel Injectors (Cyl 1, 3)
8	Check engine lamp
10	Camshaft/Cylinder ID sensor
20	Fuel Injectors (Cyl 2, 4)
24	Evaporative purge control valve
25	Oxy sensor heating relay
29	Air flow sensor
30	A/C Compressor control
36	Control unit supply
40	Ignition timing intervention
46	Oxy sensor
49	Vehicle speed signal not present
55	A/C Compressor request
64	Unspecified DME Output Stage
0c	Throttle position sensor
1d	Idle Control Valve
4c	Idle CO Potentiometer
4d	Intake air temperature sensor
4E	Coolant temperature sensor
c8	DME control unit selftest
c9	Emission (lambda) control

Table K15

1	DME control unit selftest
3	Electric fuel pump relay / TR Signal
5	Evaporative purge control valve
7	Air flow meter
10	Fuel Injectors (Cyl. 1, 3, 5 or 7, 9, 11)
11	Fuel Injectors (Cyl. 2, 4, 6 or 8, 10, 12)
17	Oxy sensor heating relay
25	Control unit supply
33	Ignition angle
36	Torque Converter Clutch
64	Unspecified DME Output Stage
0A	Emission (lambda) control
0F	Check engine lamp
1c	Oxy sensor
2b	Idle CO Potentiometer
2c	Intake air temperature sensor
2d	Coolant temperature sensor

7. Code Tables for 1996-2006 BMWs

(Important: If the tool displayed FF you are in the wrong table section)

Table 00

01	Electrical fuel pump relay
02	Idle speed actuator (close)
03	Fuel Injector, Cyl #1
04	Fuel Injector, Cyl #4
05	Fuel Injector, Cyl #6
06	Fuel Injector, Unknown
07	Fuel Injector, Cyl #7
08	Check engine lamp
10	Crankshaft sensor
11	Camshaft sensor
13	Secondary air pump relay
16	Ignition Coil, Cyl #7
17	Ignition Coil, Cyl #6
18	Ignition Coil, Cyl #4
19	Ignition Coil, Cyl #1
20	Fuel Injector, Cyl #8
21	Fuel Injector, Cyl #3
23	Fuel Injector, Cyl #2
24	Evaporative purge control valve
25	02 sensor heating relay
29	Air mass sensor
30	A/C Compressor control
31	Ignition Coil, Cyl #2
32	Ignition Coil, Cyl #3
33	Ignition Coil, Cyl #8
34	Ignition Coil, Cyl #5
36	Battery voltage - DME main relay
41	A/C Compressor
42	DWA/EWS Input
43	Knock Sensor, Cyl 7-8
44	Knock Sensor, Cyl 5-6
45	Knock Sensor, Cyl 3-4
46	Knock Sensor, Cyl 1-2
49	Throttle position sensor
52	Intervention, MSR
53	Intervention, ASC
64	Output Stage, Group #1
65	Output Stage, Group #2
0c	02 sensor, #2
0d	02 sensor, #1
0F	Ignition secondary monitor
1A	Control unit supply
1d	Idle speed actuator (open)
1F	Fuel Injector, Cyl #5
2A	Vehicle speed signal not present
3E	EML Signal
4c	Idle CO Potentiometer
4d	Intake air temperature sensor
4E	Coolant temperature sensor
c8	DME Control Unit
c9	Lambda Control #1
cA	Fault code memory error
cb	Lambda Control #2
cc	Idle speed increase - CAN Bus
cd	Ignition timing intervention
cE	Knock control test pulse
d2	CAN message
dc	EWS message

Table 06

04	PreCat 02 sensor heater, Cyl 5-8
05	AfterCat 02 sensor heater, Cyl 5-8
08	Misfire w/ low fuel
10	PreCat 02 sensor aging, Cyl 1-4
11	AfterCat 02 sensor response time, Cyl 1-4
12	PreCat 02 sensor, Cyl 5-8
14	AfterCat 02 sensor, Cyl 5-8
15	PreCat 02 sensor response time, Cyl 5-8
16	PreCat 02 sensor aging, Cyl 5-8
17	AfterCat 02 sensor response time, Cyl 5-8
18	A/C Compressor
20	Idle control valve stuck mechanically
22	Fuel trim, multiplicative, Cyl 5-8
23	Fuel trim, QL additive, Cyl 5-8
24	Fuel trim, Ti additive, Cyl 5-8
27	EWS message
28	Catalyst efficiency, Cyl 1-4
32	Misfire, Cyl #1
33	Misfire, Cyl #2
34	Misfire, Cyl #3
35	Misfire, Cyl #4
36	Misfire, Cyl #5
37	Misfire, Cyl #6
38	Misfire, Cyl #7
39	Misfire, Cyl #8
40	Misfire, catalyst damaging, Cyl #2
41	Misfire, catalyst damaging, Cyl #3
42	Misfire, catalyst damaging, Cyl #4
43	Misfire, catalyst damaging, Cyl #5
44	Misfire, catalyst damaging, Cyl #6
45	Misfire, catalyst damaging, Cyl #7
46	Misfire, catalyst damaging, Cyl #8
50	Secondary air control, Cyl 1-4
54	Secondary air pump final stage
55	Secondary air valve final stage
61	EVAP small leak
62	EVAP purge control valve circuit
65	DME, internal RAM failure
66	DME, external RAM failure
67	DME, ROM failure
68	Fault code memory error
70	Camshaft position sensor
73	Air mass sensor
75	Throttle position sensor
78	Vehicle speed signal not present
79	Load calculation crosscheck (HFM vs TPS)
87	Torque reduction: Transmission
88	8A A/C Compressor torque reduction
90	Intervention, ASC
93	Electric thermostat control performance
94	EWS Input
96	Fuel Injector, Cyl #1
97	Fuel Injector, Cyl #2
98	Fuel Injector, Cyl #3
99	Fuel Injector, Cyl #4
0A	PreCat 02 sensors, Cyl 1-4
0c	AfterCat 02 sensor, Cyl 1-4
0d	PreCat 02 sensor heater, Cyl 1-4
0E	AfterCat 02 sensor heater, Cyl 1-4
0F	PreCat 02 sensor response time, Cyl 1-4
1A	Fuel trim, multiplicative, Cyl 1-4
1b	Fuel trim, QL additive, Cyl 1-4
1c	Fuel trim, Ti additive, Cyl 1-4
2d	Catalyst efficiency, Cyl 5-8
3E	Misfire, random or unknown cylinder
3F	Misfire, catalyst damaging, Cyl #1
4b	Misfire, catalyst damaging, random or unknown cylinder
4E	Crankshaft position sensor (too many teeth)
5d	EVAP emission control system
5E	EVAP large leak
6b	Control unit supply voltage
6c	Battery disconnected
6F	Crankshaft position sensor
7b	Coolant temperature sensor
7c	Intake air temperature sensor
8b	Electric thermostat control final stage
8d	ASC signal plausibility
8F	Intervention, MSR
9A	Fuel Injector, Cyl #5
9b	Fuel Injector, Cyl #6
9c	Fuel Injector, Cyl #7
9d	Fuel Injector, Cyl #8
A5	Check engine lamp
A7	Electrical fuel pump relay
A8	Idle speed actuator (open)
A9	Idle speed actuator (close)
AA	A/C Compressor control
d0	Secondary air control, Cyl 5-8

d2	Knock Sensor, Cyl 1-2
d3	Knock Sensor, Cyl 3-4
d4	Knock Sensor, Cyl 5-6
d5	Knock Sensor, Cyl 7-8
d8	CAN timeout, ASC
dc	Knock control test pulse
dE	Knock control test pulse

EA	Automatic start input
Ec	CAN timeout, EGS
Ed	Automatic start output
Fd	Coolant fan final stage

Table 07

08	Misfire with low fuel
10	PreCat 02 sensor aging
11	AfterCat 02 sensor response time
18	Air Conditioner Compressor
20	Idle control valve stuck mechanically
27	EWS message

28	Catalyst efficiency
32	Misfire, Cyl #1
33	Misfire, Cyl #2
34	Misfire, Cyl #3
35	Misfire, Cyl #4

40	Misfire, catalyst damaging, Cyl #2
41	Misfire, catalyst damaging, Cyl #3
42	Misfire, catalyst damaging, Cyl #4
50	Secondary air control
61	EVAP small leak
62	EVAP purge control valve circuit
65	DME, internal RAM failure
66	DME, external RAM failure
67	DME, ROM failure
68	Fault code memory error
6F	Crankshaft position sensor
70	Camshaft position sensor
73	Air mass sensor
75	Throttle position sensor
78	Vehicle speed signal not present
79	Load calculation crosscheck (HFM vs TPS)
87	Torque reduction: Transmission
90	Intervention, ASC
94	EWS Input
96	Fuel Injector, Cyl #1
97	Fuel Injector, Cyl #2
98	Fuel Injector, Cyl #3
99	Fuel Injector, Cyl #4

1A	Fuel trim, multiplicative
1b	Fuel trim, QL additive
1c	Fuel trim, Ti additive
3E	Misfire, random or unknown cylinder
3F	Misfire, catalyst damaging, Cyl #1
4b	Misfire, catalyst damaging, random or unknown cylinder
4E	Crankshaft position sensor (too many teeth)
5d	EVAP emission control system
5E	EVAP large leak
6b	Control unit supply voltage
6c	Battery disconnected
7b	Coolant temperature sensor
7c	Intake air temperature sensor
8F	Intervention, MSR

0A	PreCat 02 sensor
0c	AfterCat 02 sensor
0d	PreCat 02 sensor heater
0E	AfterCat 02 sensor heater
0F	PreCat 02 sensor response time

A5	Check engine lamp
A7	Electrical fuel pump relay
A8	Idle speed actuator (open)
A9	Idle speed actuator (close)
AA	A/C Compressor control
AF	DISA (intake resonance) flap

d2	Knock Sensor, Cyl 1-2
d3	Knock Sensor, Cyl 3-4
dc	Knock control zero test
dE	Knock control test pulse
Ec	CAN timeout, EGS

Table 09

04	PreCat 02 sensor heater, Bank 2
05	AfterCat 02 sensor heater, Bank 2
08	Misfire w/ low fuel
10	PreCat 02 sensor aging, Bank 1
11	AfterCat 02 sensor response time, Bank 1
12	PreCat 02 sensor, Bank 2
14	AfterCat 02 sensor, Bank 2
15	PreCat 02 sensor response time, Bank 2
16	PreCat 02 sensor aging, Bank 2
17	AfterCat 02 sensor response time, Bank 2
18	A/C Compressor
20	Idle control valve stuck mechanically
22	Fuel trim, multiplicative, Bank 2
23	Fuel trim, QL additive, Bank 2
24	Fuel trim, Ti additive, Bank 2
27	EWS message
28	Catalyst efficiency, Bank 1
32	Misfire, Cyl #1
33	Misfire, Cyl #2
34	Misfire, Cyl #3
35	Misfire, Cyl #4
36	Misfire, Cyl #5
37	Misfire, Cyl #6
38	Misfire, Cyl #7
39	Misfire, Cyl #8
40	Misfire, catalyst damaging, Cyl #2
41	Misfire, catalyst damaging, Cyl #3
42	Misfire, catalyst damaging, Cyl #4
43	Misfire, catalyst damaging, Cyl #5
44	Misfire, catalyst damaging, Cyl #6
45	Misfire, catalyst damaging, Cyl #7
46	Misfire, catalyst damaging, Cyl #8
47	Misfire, catalyst damaging, Cyl #9
48	Misfire, catalyst damaging, Cyl #10
49	Misfire, catalyst damaging, Cyl #11
50	Secondary air control, Bank 1
54	Secondary air pump final stage
55	Secondary air valve final stage
61	EVAP small leak
62	EVAP purge control valve circuit
65	DME, internal RAM failure
66	DME, external RAM failure
67	DME, ROM failure
68	Fault code memory error
70	Camshaft position sensor
73	Air mass sensor
75	Throttle position sensor
78	Vehicle speed signal not present
79	Load calculation crosscheck (HFM vs TPS)
87	Torque reduction: Transmission
90	Intervention, ASC
93	Electric thermostat control performance
94	EWS Input
96	Fuel Injector, Cyl #1
97	Fuel Injector, Cyl #2
98	Fuel Injector, Cyl #3
99	Fuel Injector, Cyl #4
0A	PreCat 02 sensor, Bank 1
0c	AfterCat 02 sensor, Bank 1
0d	PreCat 02 sensor heater, Bank 1
0E	AfterCat 02 sensor heater, Bank 1
0F	PreCat 02 sensor response time, Bank 1
1A	Fuel trim, multiplicative, Bank 1
1b	Fuel trim, QL additive, Bank 1
1c	Fuel trim, Ti additive, Bank 1
2d	Catalyst efficiency, Bank 2
3A	Misfire, Cyl #9
3b	Misfire, Cyl #10
3c	Misfire, Cyl #11
3d	Misfire, Cyl #12
3E	Misfire, random or unknown cylinder
3F	Misfire, catalyst damaging, Cyl #1
4A	Misfire, catalyst damaging, Cyl #12
4b	Misfire, catalyst damaging, random or unknown cylinder
4E	Crankshaft position sensor (too many teeth)
5d	EVAP emission control system
5E	EVAP large leak
6b	Control unit supply voltage
6c	Battery disconnected
6F	Crankshaft position sensor
7b	Coolant temperature sensor
7c	Intake air temperature sensor
8A	A/C Compressor torque reduction
8b	Electric thermostat control final stage
8d	ASC signal plausibility
8F	Intervention, MSR
9A	Fuel Injector, Cyl #5
9b	Fuel Injector, Cyl #6
9c	Fuel Injector, Cyl #7
9d	Fuel Injector, Cyl #8
9E	Fuel Injector, Cyl #9
9F	Fuel Injector, Cyl #10
A0	Fuel Injector, Cyl #11
A1	Fuel Injector, Cyl #12
A5	Check engine lamp

A7 Electrical fuel pump relay
A8 Idle speed actuator (open)
A9 Idle speed actuator (close)
AA A/C Compressor control

d0 Secondary air control, Bank 2
d2 Knock Sensor #1
d3 Knock Sensor #2
d4 Knock Sensor #3
d5 Knock Sensor #4
d8 CAN timeout, ASC
dc Knock control test pulse
dE Knock control test pulse

EA Automatic start input
Ec CAN timeout, EGS
Ed Automatic start output
Fd Coolant fan final stage

Table 0b

01 EVAP LDP Valve final stage
02 EVAP Running losses valve final stage
03 EVAP Reed switch not closed, doesn't open/close
04 PreCat 02 sensor heater, Cyl 5-8
05 AfterCat 02 sensor heater, Cyl 5-8
11 AfterCat 02 sensor response time, Cyl 1-4
12 PreCat 02 sensor, Cyl 5-8
14 AfterCat 02 sensor, Cyl 5-8
15 PreCat 02 sensor response time, Cyl 5-8
16 PreCat 02 sensor aging, Cyl 5-8
17 AfterCat 02 sensor response time, Cyl 5-8
18 A/C Compressor
20 Idle control valve stuck mechanically
22 Fuel trim, multiplicative, Cyl 5-8
23 Fuel trim, QL additive, Cyl 5-8
24 Fuel trim, Ti additive, Cyl 5-8
27 EWS message
28 Catalyst efficiency, Cyl 1-4
32 Misfire, Cyl #1
33 Misfire, Cyl #2
34 Misfire, Cyl #3
35 Misfire, Cyl #4
36 Misfire, Cyl #5
37 Misfire, Cyl #6
38 Misfire, Cyl #7
39 Misfire, Cyl #8
40 Misfire, catalyst damaging, Cyl #2
41 Misfire, catalyst damaging, Cyl #3
42 Misfire, catalyst damaging, Cyl #4
43 Misfire, catalyst damaging, Cyl #5
44 Misfire, catalyst damaging, Cyl #6
45 Misfire, catalyst damaging, Cyl #7
46 Misfire, catalyst damaging, Cyl #8
50 Secondary air control, Cyl 1-4
54 Secondary air pump final stage
06 CAN timeout, instrument cluster
07 Engine coolant temperature, radiator outlet
08 Misfire w/ low fuel
10 PreCat 02 sensor aging, Cyl 1-4

55 Secondary air valve final stage
61 EVAP small leak
62 EVAP purge control valve circuit
65 DME, internal RAM failure
66 DME, external RAM failure
67 DME, ROM failure
68 Fault code memory error
69 DME, EEPROM failure
70 Camshaft position sensor
73 Air mass sensor
75 Throttle position sensor
78 Vehicle speed signal not present
79 Load calculation crosscheck (HFM vs TPS)
87 Torque reduction: Transmission
90 Intervention, ASC
93 Electric thermostat control performance
94 EWS Input
96 Fuel Injector, Cyl #1
97 Fuel Injector, Cyl #2
98 Fuel Injector, Cyl #3
99 Fuel Injector, Cyl #4

0A PreCat 02 sensor, Cyl 1-4
0c AfterCat 02 sensor, Cyl 1-4
0d PreCat 02 sensor heater, Cyl 1-4
0E AfterCat 02 sensor heater, Cyl 1-4
0F PreCat 02 sensor response time, Cyl 1-4
1A Fuel trim, multiplicative, Cyl 1-4
1b Fuel trim, QL additive, Cyl 1-4
1c Fuel trim, Ti additive, Cyl 1-4
1d Air containment valve, shrouded

injectors, Cyl 1-4
2d Catalyst efficiency, Cyl 5-8
3E Misfire, random or unknown cylinder
3F Misfire, catalyst damaging, Cyl #1
4b Misfire, catalyst damaging, random or unknown cylinder
4d Air containment valve, shrouded injectors, Cyl 5-8
4E Crankshaft position sensor (too many teeth)
5b EVAP purge control valve, Cyl 5-8
5d EVAP emission control system
5E EVAP large leak
6b Control unit supply voltage
6c Battery disconnected
6F Crankshaft position sensor
7b Coolant temperature sensor
7c Intake air temperature sensor
8A A/C Compressor torque reduction
8b Electric thermostat control final stage
8d ASC signal plausibility
8F Intervention, MSR
9A Fuel Injector, Cyl #5
9b Fuel Injector, Cyl #6
9c Fuel Injector, Cyl #7
9d Fuel Injector, Cyl #8

A4 EVAP Barometric tank pressure sensor
A5 Check engine lamp
A7 Electrical fuel pump relay
A8 Idle speed actuator (open)
A9 Idle speed actuator (close)
AA A/C Compressor control

b7 EVAP large leak
b8 EVAP pinched hose check

cb Ignition feedback failed
cc EWS rolling code storage

d0 Secondary air control, Cyl 5-8
d2 Knock Sensor, Cyl 1-2
d3 Knock Sensor, Cyl 3-4
d4 Knock Sensor, Cyl 5-6
d5 Knock Sensor, Cyl 7-8
d6 CAN index verification
d7 CAN timeout, left/right DME
d8 CAN timeout, ASC
d9 CAN signal, EML
dc Knock control test pulse
dE Knock control test pulse
E4 Automatic start output
E9 Automatic start output
EA Automatic start input
Ec CAN timeout, EGS
Ed Automatic start output

Fd Coolant fan final stage

Table 0E

1 EVAP LDP Valve final stage
2 EVAP Running losses valve final stage
3 EVAP Reed switch not closed, doesn't open/close
4 PreCat oxy sensor heater, Bank 2
5 AfterCat oxy sensor heater, Bank 2
6 CAN timeout, instrument cluster
7 Engine coolant temperature, radiator outlet
8 Misfire w/ low fuel
10 PreCat oxy sensor aging, Bank 1
11 AfterCat oxy sensor response time, Bank 1
12 PreCat oxy sensor, Bank 2
13 CAN timeout, EKAT
14 AfterCat oxy sensor, Bank 2
15 PreCat oxy sensor response time, Bank 2
16 PreCat oxy sensor aging, Bank 2
17 AfterCat oxy sensor response time, Bank 2
18 A/C Compressor
20 Idle control valve stuck mechanically
21 EKAT - Status 8 - EKAT ECU
22 Fuel trim, multiplicative, Bank 2
23 Fuel trim, QL additive, Bank 2
24 Fuel trim, Ti additive, Bank 2
27 EWS message
28 Catalyst efficiency, Bank 1
30 EKAT - Status 6 - Power switch for Catalyst #2
32 Misfire, Cyl #1
33 Misfire, Cyl #2
34 Misfire, Cyl #3
35 Misfire, Cyl #4
36 Misfire, Cyl #5
37 Misfire, Cyl #6
38 Misfire, Cyl #7

39 Misfire, Cyl #8
40 Misfire, catalyst damaging, Cyl #2
41 Misfire, catalyst damaging, Cyl #3
42 Misfire, catalyst damaging, Cyl #4
43 Misfire, catalyst damaging, Cyl #5
44 Misfire, catalyst damaging, Cyl #6
45 Misfire, catalyst damaging, Cyl #7
46 Misfire, catalyst damaging, Cyl #8
47 Misfire, catalyst damaging, Cyl #9
48 Misfire, catalyst damaging, Cyl #10
49 Misfire, catalyst damaging, Cyl #11
50 Secondary air control, Bank 1
51 EKAT - Status 9 - Sensor check temperature sensor 1 in batt.
52 EKAT - Status 10 - Sensor check temperature sensor 2 in batt.
53 EKAT - Status 11 - plausibility check of sensor temp. in batt.
54 Secondary air pump final stage
55 Secondary air valve final stage
61 EVAP small leak
62 EVAP purge control valve circuit

0A PreCat oxy sensor, Bank 1
0c AfterCat oxy sensor, Bank 1
0d PreCat oxy sensor heater, Bank 1
0E AfterCat oxy sensor heater, Bank 1
0F PreCat oxy sensor response time, Bank 1

1A Fuel trim, multiplicative, Bank 1
1b Fuel trim, QL additive, Bank 1
1c Fuel trim, Ti additive, Bank 1
1d Air containment valve, shrouded injectors, Bank 1
1E EKAT - Status 7 - power switch control

2A EKAT - Status 1 - heater disconnection, Catalyst #1
2b EKAT - Status 2 - Switch on operation condition for Catalyst #1
2c EKAT - Status 3 - Power switch for Catalyst #1
2d Catalyst efficiency, Bank 2
2E EKAT - Status 4 - Heater disconnection, Catalyst #2
2F EKAT - Status 5 - Switch on operation condition for Catalyst #2

3A Misfire, Cyl #9
3b Misfire, Cyl #10
3c Misfire, Cyl #11
3d Misfire, Cyl #12
3E Misfire, random or unknown cylinder

64 Transmission/coolant heat exchanger
65 DME, internal RAM failure
66 DME, external RAM failure
67 DME, ROM failure
68 Fault code memory error
69 DME, EEPROM failure
70 Camshaft position sensor
73 Air mass sensor
75 Throttle position sensor
78 Vehicle speed signal not present
79 Load calculation crosscheck (HFM vs TPS)
82 Swapped oxy sensors, PreCat
85 DME bank identification input
87 Torque reduction: Transmission
90 Intervention, ASC
93 Electric thermostat control performance
94 EWS Input
96 Fuel Injector, Cyl #1
97 Fuel Injector, Cyl #2
98 Fuel Injector, Cyl #3
99 Fuel Injector, Cyl #4

3F Misfire, catalyst damaging, Cyl #1

4A Misfire, catalyst damaging, Cyl #12
4b Misfire detected, catalyst damaged, random/unknown cyl.
4d Air containment valve, shrouded injectors, Bank 2
4E Crankshaft position sensor (too many teeth)

5b EVAP purge control valve, Bank 2
5d EVAP emission control system
5E EVAP large leak

6b Control unit supply voltage
6c Battery disconnected
6F Crankshaft position sensor

7b Coolant temperature sensor
7c Intake air temperature sensor
8A A/C Compressor torque reduction
8b Electric thermostat control final stage
8c Torque imbalance
8d ASC signal plausibility
8F Intervention, MSR

9A Fuel Injector, Cyl #5
9b Fuel Injector, Cyl #6
9c Fuel Injector, Cyl #7
9d Fuel Injector, Cyl #8
9E Fuel Injector, Cyl #9

9F Fuel Injector, Cyl #10

A0 Fuel Injector, Cyl #11
A1 Fuel Injector, Cyl #12
A3 Electrical fuel pump relay, Bank 2
A4 EVAP barometric tank pressure sensor
A5 Check engine lamp
A7 Electrical fuel pump relay
A8 Idle speed actuator (open)
A9 Idle speed actuator (close)
AA A/C Compressor control

b3 A/C Compressor control, Bank 2
b7 EVAP large leak
b8 EVAP pinched hose

cb Ignition feedback failed
cc EWS rolling code storage

d0 Secondary air control, Bank 2
d2 Knock Sensor #1
d3 Knock Sensor #2
d4 Knock Sensor #3
d5 Knock Sensor #4
d6 CAN index verification
d7 CAN timeout, left/right DME
d8 CAN timeout, ASC
d9 CAN timeout, EML
dc Knock control test pulse
dE Knock control test pulse

E1 EKAT - Status 12 - temperature sensor - plausibility power switch
E2 EKAT - Status 13 - temperature sensor - plausibility power switch
E3 EKAT - Status 14 - plausibility check of battery disconnect switch
E4 Automatic start output
E9 Automatic start output
EA Automatic start input

Table 0F

01 LDP control circuit
02 DM-TL solenoid control circuit
03 PreCat 02 sensors swapped
04 AfterCat 02 sensor heater, Cyl#5-8
05 PreCat 02 sensor heater, Cyl#5-8
10 PreCat 02 sensor aging, Cyl#1-4
11 AfterCat 02 sensor aging, Cyl#1-4
12 PreCat 02 sensor, Cyl#5-8
14 AfterCat 02 sensor, Cyl#5-8
15 PreCat 02 sensor slow response, Cyl#5-8
16 PreCat 02 sensor aging, Cyl#5-8
17 AfterCat 02 sensor aging, Cyl#5-8
18 Mixture Control, higher load, Cyl #1-4
19 Mixture Control, higher load, Cyl #5-8
20 Idle speed control
21 Camshaft VANOS control, Cyl#1-4
22 Camshaft VANOS control, Cyl#5-8
27 EWS, manipulation detected
28 Catalyst efficiency, Cyl#1-4
32 Misfire, Cyl #1
33 Misfire, Cyl #5
34 Misfire, Cyl #4
35 Misfire, Cyl #8
36 Misfire, Cyl #6
37 Misfire, Cyl #3
38 Misfire, Cyl #7
39 Misfire, Cyl #2
50 Secondary air system, Cyl #1-4
51 Secondary air system, Cyl #5-8
52 Secondary air valve
54 Secondary air control circuit
55 Secondary air valve
62 Evaporative emission system purge valve
65 Torque monitoring
66 MFL interface
67 Safety concept monitoring
68 Clutch switch
69 Control unit self-test, RAM faulty
70 Timing reference high resolution signal
71 Camshaft position sensor, Cyl#1-4
72 Camshaft position sensor, Cyl#5-8
73 Air mass sensor
75 Throttle position sensors
76 Throttle position sensor 1
77 Throttle position sensor 2
78 Vehicle speed
79 Wheel sensor failure
82 Drive-by-wire throttle position monitoring
83 Drive-by-wire throttle control
84 Drive-by-wire throttle control output stage
85 Drive-by-wire throttle controller, spring check
86 Drive-by-wire throttle controller, lower adaptation
87 Drive-by-wire throttle controller, amplifier check
88 Drive-by-wire throttle, emergency air

position test
94 EWS signal/interface
96 Fuel Injector, Cyl #1
97 Fuel Injector, Cyl #5
98 Fuel Injector, Cyl #4
99 Fuel Injector, Cyl #8

0A PreCat 02 sensor, Cyl#1-4
0c AfterCat 02 sensor, Cyl#1-4
0d PreCat 02 sensor heater, Cyl#1-4
0E AfterCat 02 sensor heater, Cyl#1-4
0F PreCat 02 sensor slow response, Cyl#1-4

1A Mixture Control, off idle, Cyl #1-4
1b Mixture Control, off idle, Cyl #5-8
1c Mixture Control, idle, Cyl #1-4
1d Mixture Control, idle, Cyl #5-8
1E Mixture Control, idle, Cyl #1-4
1F Mixture Control, idle, Cyl #5-8
2d Catalyst efficiency, Cyl#5-8
3E Misfire, random/multiple cylinders
5d Evaporative emission system
6A Brake switch
6b Control unit self-test, ROM faulty
6c Control unit self-test, reset
6d Battery voltage
6E Torque control
6F Crankshaft sensor
7A Ambient temperature sensor
7b Engine coolant temperature sensor
7c Intake air temperature sensor
7d Radiator outlet temperature sensor
7F Coolant temperature plausibility
8b Map controlled thermostat jammed
8c Map controlled thermostat circuit/control
8d Engine cooling fan control
8E Exhaust flap control
9A Fuel Injector, Cyl #6
9b Fuel Injector, Cyl #3
9c Fuel Injector, Cyl #7
9d Fuel Injector, Cyl #2

A3 Throttle position / air mass plausibility
A4 Ambient pressure sensor
A5 VANOS output stage, Cyl #1-4
A6 VANOS output stage, Cyl #5-8
A7 Fuel pump relay control
A8 Check engine lamp/MIL
AA A/C compressor control

b7 LDP diagnosis
b8 LDP system
b9 LDP pressure sensor
bA DM-TL pump control circuit
bb DM-TL small leak
bc DM-TL large leak
bd DM-TL pump current

c9 DM-TL heater
cc EWS exchange code stored

d2 Knock sensor, Cyl #1-2
d3 Knock sensor, Cyl #3-4
d4 Knock sensor, Cyl #5-6
d5 Knock sensor, Cyl #7-8
d6 Knock control zero test
d7 Knock control offset
d8 Knock control test pulse
db CAN timeout
dc CAN timeout, EGS
dd CAN timeout, ASC/DSC
dE CAN timeout, instrument cluster
dF CAN timeout, ACC

E0 MSR intervention plausibility
E1 ACC intervention plausibility
E2 Fuel level plausibility
E5 Pedal position sensor supply voltage
E6 Pedal position sensors
E7 Pedal position sensor 1
E8 Pedal position sensor 2
E9 Automatic starter control output
EA Automatic starter input signal
Ec Intake air flap control
Ed Automatic starter

Table 1b

01 Fuel pump relay
02 Idle speed actuator (close)
03 Fuel Injector, Cyl #1
04 Fuel Injector, Cyl #3
05 Fuel Injector, Cyl #2
06 Timeout SMG-CAN

07 Intake camshaft position sensor
09 Knock sensor, Cyl #1-2
10 Crankshaft sensor
11 SMG shifting
12 Map controlled thermostat actuator
13 Secondary air pump relay

14 Starter relay
15 Exhaust camshaft VANOS retard valve, Cyl #1-4
16 Exhaust camshaft VANOS advance valve, Cyl #1-4
17 Ignition Coil, Cyl #2
18 Ignition Coil, Cyl #3
19 Ignition Coil, Cyl #1
20 Fuel Injector, Cyl #6
21 Fuel Injector, Cyl #4
24 Evaporative emission purge control valve
25 PreCat 02 sensor heater control, Cyl #1-3
26 PreCat 02 sensor heater control, Cyl #4-6
27 AfterCat 02 sensor heater control, Cyl #1-3
28 AfterCat 02 sensor heater control, Cyl #4-6
55 Throttle position sensor, master measurement
56 CAN bus offline
57 AfterCat 02 sensor voltage, Cyl #1-3
58 AfterCat 02 sensor voltage, Cyl #4-6
59 Control unit self-test, Safety Concept slave check
60 Radiator outlet temp plausibility
63 Control unit self-test, Safety Concept master check
69 Engine coolant temperature, Plausibility
70 Pedal position sensor 2, cross check
73 Control unit self-test, internal ECU temperature
76 Throttle position sensor 1
77 Throttle position sensor 2
78 Throttle position sensors, cross check
79 Throttle position sensors, both bad
80 Idle speed deviation
81 Low fuel catalyst protection
82 EWS signal, manipulation detected
83 DSC intervention, plausibility
84 DSC message timeout
85 LWS message timeout
86 Instrument Cluster message timeout
87 Vehicle speed signal
88 Idle speed controller
90 Fuel control, Cyl #1-3
91 Fuel control, Cyl #4-6
95 Misfire w/ empty fuel tank
96 Control unit self-test, memory test master
97 Control unit self-test, driver diagnostics chain
29 Air mass sensor
30 A/C Compressor relay
32 Ignition Coil, Cyl #4
33 Ignition Coil, Cyl #6
34 Ignition Coil, Cyl #5
35 Electronic fan (relay)
36 Battery voltage behind main relay
41 Throttle position sensor 2, slave measurement
42 EWS interface
43 Intake camshaft VANOS advance valve
44 SMG Safety concept
45 Knock sensor, Cyl #5-6
46 Knock sensor, Cyl #3-4
48 Intake camshaft VANOS retard valve
49 Air mass sensor, plausibility
50 Switch-chain grip
51 MFL interface signal
52 Muffler flap

98 Control unit self-test, communication master

0A Exhaust camshaft position sensor
0c PreCat 02 sensor, Cyl #4-6
0d PreCat 02 sensor, Cyl #1-3
0E Tank small leak
0F Crankshaft/Camshaft position correlation
1b DM-TL switching valve
1c Map controlled thermostat control
1d Idle speed actuator (open)
1E Control unit self-test, A/D converter monitoring
1F Fuel Injector, Cyl #5
2A Vehicle speed signal
2b Radiator outlet temperature sensor
2c Thermal oil level sensor
2d Drive-by-wire throttle actuator driver
2E Fuel consumption (KVA) signal output
2F Engine RPM (TD) signal output
3A Sensor voltage supply 1
3b Sensor voltage supply 2
3c Pedal position sensor 1, master measurement
3d Pedal position sensor 2, master measurement
3F Secondary air switching valve
4c Ambient pressure sensor
4d Intake air temperature sensor
4E Coolant temperature sensor
4F Exhaust gas temperature sensor
5A PreCat 02 sensor aging, Cyl #1-3
5b PreCat 02 sensor aging, Cyl #4-6

5c AfterCat 02 sensor aging, Cyl #1-3
5d AfterCat 02 sensor aging, Cyl #4-6
6A Brake light switch
6b Control unit self-test, pre-drive check of drive-by-wire system
6c Switching valve oil circuit left
6d Switching valve oil circuit right
6E Sport switch LED indicator
6F Pedal position sensor 1, cross check
7A Control unit self-test, master processor
7b Bus offline, SMG-CAN
7E Fuel pump crash shut-off
7F DM-TL module
8b Cruise control system
8c Engine noise too high
8d Fuel level, plausibility
8F E-box-fan
9A Crankcase venting
9b Control unit self-test, adaptation
b0 DM-TL error
b2 Catalyst system efficiency, Cyl #1-3
b3 Catalyst system efficiency, Cyl #4-6
b4 Tank leak detected
b5 Filler cap open
b6 Injection driver 1, over temperature
b7 Injection driver 2, over temperature
b8 Intake camshaft VANOS position control
b9 Exhaust camshaft VANOS position control
bA Ignition output stage, Cyl #1
bb Ignition output stage, Cyl #2
bc Ignition output stage, Cyl #3
bd Ignition output stage, Cyl #4
bE Ignition output stage, Cyl #5
bF Ignition output stage, Cyl #6

c2 Control unit self-test, cruise control shut-off
c3 Control unit self-test, torque manager monitoring
c4 Misfire w/ fuel cutoff, Cyl #1
c5 Misfire w/ fuel cutoff, Cyl #2
c6 Misfire w/ fuel cutoff, Cyl #3
c7 Misfire w/ fuel cutoff, Cyl #4
c8 Misfire w/ fuel cutoff, Cyl #5
c9 Misfire w/ fuel cutoff, Cyl #6
cc Misfire, multiple cylinders w/ fuel cutoff
cd Misfire during warm-up, Cyl #1
cE Misfire during warm-up, Cyl #2
cF Misfire during warm-up, Cyl #3

d0 Misfire during warm-up, Cyl #4
d1 Misfire during warm-up, Cyl #5

EEPROM master
9c Control unit self-test, adaptation EEPROM slave
9d Control unit self-test, memory test slave
9E Control unit self-test, communication slave
9F Control unit self-test, knock detection IC 1

A0 Control unit self-test, knock detection IC 2
A1 Knock control
A3 Control unit self-test, master resets
AA Secondary air system, flow too low
Ab Secondary air system, valve sticking
Ac VANOS pressure storage valve
Ad Starter switch input
AE Mixture adaptation, Cyl #1-3
AF Mixture adaptation, Cyl #4-6
d2 Misfire during warm-up, Cyl #6
d5 Misfire during warm-up, multiple cylinders
d6 PreCat 02 sensor slow response, Cyl #1-3
d7 PreCat 02 sensor slow response, Cyl #4-6
d8 PreCat 02 sensor slow switching (rich to lean), Cyl #1-3
d9 PreCat 02 sensor slow switching (rich to lean), Cyl #4-6
dA PreCat 02 sensor signal size/amplitude, Cyl #1-3
db PreCat 02 sensor signal size/amplitude, Cyl #4-6
dd System check, crankcase venting
dE CAN timeout, ZSG

E0 Load signal plausibility
E1 Ambient temperature
E2 Instrument cluster, relative time
E4 Drive-by-wire, throttle control failure
E5 Drive-by-wire, throttle control failure
E6 Drive-by-wire, throttle position failure
E7 Control unit self-test, slave processor check
E8 Evaporative emissions purge valve functional check

F7 VANOS pressure accumulator valve
F8 Intake camshaft VANOS moving time
F9 Exhaust camshaft VANOS moving time
FA Intake camshaft VANOS sealing
Fb Exhaust camshaft VANOS sealing

Table 11 (& *Table* 16)

01 Ignition Coil, Cyl #2
02 Ignition Coil, Cyl #4
03 Ignition Coil, Cyl #6
05 Fuel Injector, Cyl #2
06 Fuel Injector, Cyl #1
08 Air mass sensor
10 A/C compressor PWM signal
12 EWS Signal
14 Check engine lamp
15 VANOS (Solenoid)
16 Fuel Injector, Cyl #3
17 Fuel Injector, Cyl #6
18 Fuel Injector, Cyl #4
19 PreCat 02 sensor heater, Cyl #1-3
21 Fuel Injector, Cyl #5
23 Secondary air system relay/pump

0A Coolant temperature sensor
0b EVAP system pressure sensor
0c Throttle position sensor
0E Intake air temperature sensor
1b Idle speed actuator (close)
1d Ignition Coil, Cyl #1
1E Ignition Coil, Cyl #3
1F Ignition Coil, Cyl #5
2E Fuel level signal (reserve lamp)
2F Catalyst temperature after start-up
3b Knock Sensor, Cyl #4-6
3d AfterCat 02 sensor heater, Cyl #4-6
3E Secondary air system, switching valve
4A A/C compressor relay
4b PreCat 02 sensor voltage, Cyl #1-3
4c PreCat 02 sensor voltage, Cyl #4-6
4d AfterCat 02 sensor voltage, Cyl #1-3
4E AfterCat 02 sensor voltage, Cyl #4-6
4F AfterCat 02 sensor heater, Cyl #1-3

bE EVAP reed switch not closed
bF EVAP reed switch doesn't open

c0 EVAP reed switch doesn't close
c1 EVAP clamped tube check
c2 EVAP large leak detected
c3 EVAP small leak detected
c4 EVAP electrical LDP valve
c5 EVAP barometric pressure sensor
c8 PreCat 02 sensor no activity, Cyl #1-3
c9 PreCat 02 sensor no activity, Cyl #4-6
cA 02 sensor control limit, Cyl #1-3
cb 02 sensor control limit, Cyl #4-6
cc Idle control system, idle speed not plausible

d1 EWS message
d2 Ignition feedback faulty (>2 cylinders)
d3 Idle control valve mechanically stuck
d4 VANOS mechanically stuck
d6 Vehicle speed signal not present
d7 ASC/MSR/EML - interface not plausible
d8 Gear selector signal, signal undefined
d9 CAN bus timeout
dA CAN controller - warning level reached
db CAN bus offline
dE Time to closed loop temperature too long
E3 02 sensor adaptation limit, Cyl #1-3
E4 02 sensor adaptation limit, Cyl #4-6
E5 PreCat 02 sensor response time, Cyl #1-3
E6 PreCat 02 sensor response time, Cyl #4-6
E7 PreCat 02 sensor switching Time, Cyl #1-3
E8 PreCat 02 sensor switching Time, Cyl #4-6
E9 Catalyst efficiency below threshold, Cyl #1-3
EA Catalyst efficiency below threshold, Cyl #4-6
Eb AfterCat 02 sensor heater power, Cyl #1-3
Ec AfterCat 02 sensor heater power, Cyl #4-6
EE Misfire, Cyl #1
EF Misfire, Cyl #2
32 EVAP system running losses valve
33 EVAP system shutoff valve
34 Rear exhaust valve flap
35 Idle speed actuator (open)
37 PreCat 02 sensor heater, Cyl #4-6
38 Ignition feedback - shunt resistor
39 Knock Sensor, Cyl #1-3
41 Camshaft sensor
44 EVAP system, purge control valve ckt.
45 Electrical fuel pump relay
50 ASC signal, active too long
51 MSR signal, active too long
52 EML signal, active too long
53 Crankshaft Sensor
64 DME Control Unit

F0	Misfire, Cyl #3
F1	Misfire, Cyl #4
F2	Misfire, Cyl #5
F3	Misfire, Cyl #6
F4	Flywheel adaptation, segment timing faulty
F5	Secondary air system flow too low, Cyl #1-3
F6	Secondary air system flow too low, Cyl #4-6
F7	Secondary air system injector valve jammed
FA	EVAP TEV not operating
Fb	EVAP small leak detected
Fc	EVAP incorrect purge flow
Fd	EVAP shut off valve stuck closed
FE	EVAP large leak detected
FF	EVAP TEV stuck open

Table 12

01	Relay Fuel pump
02	Idle adjuster closing coil
03	Injector valve 1
04	Injector valve 3
05	Injector valve
16	Output-VANOS-early valve
17	Ignition output transistor 2
18	Ignition output transistor 3
19	Ignition output transistor 1
20	Injector valve 6
21	Injector valve 4
24	Tank ventilation valve
25	Relay Lambda probe heating
29	Air mass flow meter
30	Relay Air conditioning compressor
32	Ignition output transistor 4
33	Ignition output transistor 6
34	Ignition output transistor 5
35	Relay electric fan
36	Battery voltage
40	Air condition switch AC/KO
42	EWS-interface
43	Output-VANOS-early valve
44	Knock sensor 3
45	Knock sensor 2
46	Knock sensor 1
48	Output-VANOS-late valve
49	Throttle valve potentiometer
50	Switch Gear
52	Starter switch KL50
56	CAN-bus Off
82	EWS-signal manipulation
88	Error idle speed controller
89	CAN-protocol error
90	lambda controller 1
07	Input camshaft sensor
09	Ignition current Bank 2
10	Error crankshaft-sensor
13	Relay Secondary air pump
15	Output-VANOS-late valve
91	lambda controller 2
96	Internal: Memory test Master
97	Internal: Driver diagnosis
98	Internal: Communication Master
0A	Output camshaft sensor
0c	Lambda probe 2
0d	Lambda probe 1
0F	Ignition current Bank 1
1d	Idle adjuster opening coil
1F	Injector valve 5
2A	Speed sensor
2c	Active Oil level sensor
2E	Consumption signal
2F	Engine speed signal
4d	Intake air temperature sensor
4E	Cooling water temperature sensor
8A	CAN-Timeout message 1
8b	CAN-Timeout message 2
8c	CAN-Timeout message 3
9b	Internal: Error memory Master
9c	Internal: Error memory slave
9d	Internal: Memory test slave
9E	Internal: Communication slave
9F	Internal: Knock module 1
A0	Internal: Knock module 2
A1	Internal: Knock module 3
A2	Synchronization camshaft sensor
A3	Internal: Ecu-reset

Table 15 (*different from Table* K15)

01	Ignition Coil, Cyl #2
02	Ignition Coil, Cyl #4
03	Ignition Coil, Cyl #6
05	Fuel Injector, Cyl #2

06 Fuel Injector, Cyl #1
08 Air mass sensor
12 Camshaft sensor, exhaust cam
13 VANOS solenoid, exhaust
15 VANOS solenoid, intake
16 Fuel Injector, Cyl #3
17 Fuel Injector, Cyl #6
18 Fuel Injector, Cyl #4
19 PreCat 02 sensor heater, Cyl #1-3
21 Fuel Injector, Cyl #5
23 Secondary air system electrical pump
26 Clutch switch
27 Brake light switch (BLS) / brake light test plausibility
28 Brake light switch (BLS) / pedal sensor plausibility
29 Multi-function steering wheel (MFL) signal

32 Running loss (3/2) valve final stage
34 Rear exhaust valve flap
35 Idle speed actuator (open)
37 PreCat 02 sensor heater, Cyl #4-6
38 Ignition feedback - shunt resistor
39 Knock Sensor, Cyl #1-3
41 Camshaft sensor, intake cam
44 EVAP system, purge control valve circuit
45 Electrical fuel pump relay
53 Crankshaft Sensor
64 DME Control Unit
67 VANOS, faulty intake reference value
68 VANOS, faulty exhaust reference value
69 VANOS, intake mechanically stuck
70 Motorized Throttle Valve (MDK) potentiometer #1

71 Motorized Throttle Valve (MDK) potentiometer #2
72 Motorized Throttle Valve (MDK) final stage
73 Reference voltage (5v) source for #1 potentiometers
74 Reference voltage (5v) source for #2 potentiometers
75 Pedal sensor (PWG) potentiometer plausibility
76 Motorized Throttle Valve (MDK) feedback plausibility
77 Motorized Throttle Valve (MDK) mechanically stuck
78 PWG / MDK potentiometers not plausible
80 EWS signal
82 CAN timeout (ASC1)
83 CAN timeout (instr2)
84 CAN timeout (instr3)
85 CAN timeout (ASC3)
90 EVAP large leak detected
91 EVAP small leak detected
92 EVAP capillary leak (0.5mm) detected
95 MDK position and air mass signal not plausible
96 PreCat 02 sensor short to B+, Cyl #1-3
97 PreCat 02 sensor short to ground, Cyl #1-3
98 PreCat 02 sensor disconnection, Cyl #1-3
99 PreCat 02 sensor short to B+, Cyl #4-6

0A Coolant temperature sensor
0b Radiator outlet temperature sensor

0E Intake air temperature sensor
1b Idle speed actuator (close)
1d Ignition Coil, Cyl #1
1E Ignition Coil, Cyl #3
1F Ignition Coil, Cyl #5
2A Multi-function steering wheel (MFL) redundant code transmission
2b Multi-function steering wheel (MFL) control switch
2d Multi-function steering wheel (MFL) toggle bit
3b Knock Sensor, Cyl #4-6
3d AfterCat 02 sensor heater, Cyl #4-6
3E Secondary air system, switching valve
4A A/C compressor relay
4F AfterCat 02 sensor heater, Cyl #1-3
6A VANOS, exhaust mechanically stuck
6d Motorized Throttle Valve (MDK), PWM not plausible
6E Pedal sensor (PWG) potentiometer #1
6F Pedal sensor (PWG) potentiometer #2
7A Oil temperature sensor
7b Electric thermostat control final stage
7c DISA flap control
7d Coolant fan final stage
7E LDP solenoid valve
7F Electrical fuel pump
8c EVAP LDP reed switch not closed
8d EVAP LDP reed switch doesn't open
8E EVAP LDP reed switch doesn't close
8F EVAP clamped tube check
9A PreCat 02 sensor short to ground, Cyl #4-6
9b PreCat 02 sensor disconnection, Cyl #4-6

9c AfterCat 02 sensor short to B+, Cyl #1-3
9d AfterCat 02 sensor short to ground, Cyl #1-3
9F AfterCat 02 sensor short to B+, Cyl #4-6

A0 AfterCat 02 sensor short to ground, Cyl #4-6
A8 Electrical thermostat mechanically jammed open
A9 Motorized Throttle (MDK) final stage failure
AA Communication with safety controller disturbed
Ab Safety controller has shut down MDK function
Ac Pedal sensor (PWG) short between potentiometers
Ad Motorized Throttle (MDK) short between potentiometers
AE Motorized Throttle (MDK) idle position not plausible
AF Pedal sensor (PWG) pot. #1 idle position not plausible

b0 Pedal sensor (PWG) pot. #2 idle position not plausible
bb O2 sensor ckt, no activity detected, bank2, sensor 1
bc PreCat 02 sensor heater insufficient, Cyl #1-3
bd PreCat 02 sensor heater insufficient, Cyl #4-6
bE AfterCat 02 sensor heater insufficient, Cyl #1-3
bF AfterCat 02 sensor heater insufficient, Cyl #4-6

cA 02 sensor control limit, Cyl #1-3
cb 02 sensor control limit, Cyl #4-6
cc Idle control system, idle speed not plausible

d0 EWS engine speed check not ok
d1 EWS message
d2 Ignition feedback faulty (>2 cylinders)
d3 Idle control valve mechanically stuck
d6 Vehicle speed signal not present
d7 AfterCat 02 sensor disconnection, Cyl #1-3
d8 AfterCat 02 sensor disconnection, Cyl #4-6
d9 CAN timeout (EGS1)
db CAN bus offline
dc AfterCat 02 sensor slow response time, Cyl #1-3
dd AfterCat 02 sensor slow response time, Cyl #4-6
dE Coolant temp too low for closed loop operation
dF AfterCat 02 sensor slow switching time, Cyl #1-3

E0 AfterCat 02 sensor slow switching time, Cyl #4-6
E1 AfterCat 02 sensor trim control, Cyl #1-3
E2 AfterCat 02 sensor trim control, Cyl #4-6
E3 02 sensor adaptation limit, Cyl #1-3
E4 02 sensor adaptation limit, Cyl #4-6
E5 PreCat 02 sensor slow response time, Cyl #1-3
E6 PreCat 02 sensor slow response time, Cyl #4-6
E7 PreCat 02 sensor slow switching Time, Cyl #1-3
E8 PreCat 02 sensor slow switching Time, Cyl #4-6
E9 Catalyst efficiency below threshold, Cyl #1-3
EA Catalyst efficiency below threshold, Cyl #4-6
Eb PreCat 02 sensor trim control, Cyl #1-3
Ec PreCat 02 sensor trim control, Cyl #4-6
EE Misfire, Cyl #1
EF Misfire, Cyl #2

FA Functional check purge valve

Table 16 (see table 11)

Table 18

01 Fuel pump relay
02 Idle speed actuator (close)
03 Fuel Injector, Cyl #1
04 Fuel Injector, Cyl #3
05 Fuel Injector, Cyl #2
06 Timeout SMG-CAN

07 Intake camshaft position sensor, Cyl #1-4
08 Intake camshaft position sensor, Cyl #5-8
09 Knock sensor, Cyl #1-2
10 Crankshaft sensor
12 Map controlled thermostat actuator
13 Secondary air pump relay
14 Starter relay
15 Exhaust camshaft VANOS retard valve, Cyl #1-4
16 Exhaust camshaft VANOS advance valve, Cyl #1-4
17 Ignition Coil, Cyl #2
18 Ignition Coil, Cyl #3
19 Ignition Coil, Cyl #1
20 Fuel Injector, Cyl #6
21 Fuel Injector, Cyl #4
36 Battery voltage behind main relay
37 Ignition Coil, Cyl #7
39 Air mass sensor, Cyl #5-8
41 Throttle position sensor 2, slave measurement
42 EWS interface
43 Intake camshaft VANOS advance valve, Cyl #1-4
45 Knock sensor, Cyl #5-6
46 Knock sensor, Cyl #3-4
47 Knock sensor, Cyl #7-8
48 Intake camshaft VANOS retard valve, Cyl #1-4
49 Air mass sensor, plausibility
50 Switch-chain grip
51 MFL interface signal
52 Muffler flap
53 Exhaust camshaft VANOS advance valve, Cyl #5-8
54 Exhaust camshaft VANOS retard valve, Cyl #5-8
55 Throttle position sensor, master measurement
56 CAN bus offline
57 AfterCat 02 sensor voltage, Cyl #1-4
58 AfterCat 02 sensor voltage, Cyl #5-8
59 Control unit self-test, Safety Concept slave check
63 Control unit self-test, Safety Concept master check
64 Tire pressure left front
65 Tire pressure right front
66 Tire pressure right back
67 Tire pressure left back
69 Engine coolant temperature, Plausibility
70 Pedal position sensor 2, cross check
22 Fuel Injector, Cyl #7
23 Fuel Injector, Cyl #8
24 Evaporative emission purge control valve
25 PreCat 02 sensor heater control, Cyl #1-4
26 PreCat 02 sensor heater control, Cyl #5-8
27 AfterCat 02 sensor heater control, Cyl #1-4
28 AfterCat 02 sensor heater control, Cyl #5-8
29 Air mass sensor, Cyl #1-4
30 A/C Compressor relay
32 Ignition Coil, Cyl #4
33 Ignition Coil, Cyl #6
34 Ignition Coil, Cyl #5
35 Electronic fan (relay)
71 Intake camshaft VANOS position control, Cyl #5-8
72 Exhaust camshaft VANOS position control, Cyl #5-8
73 Control unit self-test, internal ECU temperature
74 Servotronic valve current
75 Servotronic speed signal
76 Throttle position sensor 1
77 Throttle position sensor 2
78 Throttle position sensors, cross check
79 Throttle position sensors, both bad
80 Idle speed deviation
82 EWS signal, manipulation detected
83 DSC intervention, plausibility
84 DSC message timeout
85 Steering angle sensor message timeout
86 Instrument Cluster message timeout
87 Vehicle speed signals (both Discrete & CAN)
88 Idle speed controller
89 Jet stream pump
90 Fuel control, Cyl #1-4
91 Fuel control, Cyl #5-8
95 Misfire w/ empty fuel tank
96 Control unit self-test, memory test master
97 Control unit self-test, driver diagnostics chain
98 Control unit self-test, communication master

0A Exhaust camshaft position sensor, Cyl #1-4
0b Exhaust camshaft position sensor, Cyl #5-8

0c PreCat 02 sensor, Cyl #5-8
0d PreCat 02 sensor, Cyl #1-4
0E Tank small leak
0F Crankshaft/Camshaft position correlation, Cyl #1-4
1A Ignition Coil, Cyl #8
1b DM-TL switching valve
1c Map controlled thermostat control
1d Idle speed actuator (open)
1E Control unit self-test, A/D converter monitoring
1F Fuel Injector, Cyl #5
2A Vehicle speed input signal, hardwired A signal
2b Radiator outlet temperature sensor
2c Thermal oil level sensor
2d Drive-by-wire throttle actuator driver
2E Fuel consumption (KVA) signal output
6F Pedal position sensor 1, cross check
7A Control unit self-test, master processor
7b Bus offline, SMG-CAN
7c Active engine bearing
7d Spoiler adjustment
7E Fuel pump crash shut-off
7F DM-TL module
8A Differential lock
8b Cruise control system
8c Engine noise too high
8d Fuel level, plausibility
8F E-box-fan
9b Control unit self-test, adaptation EEPROM master
9c Control unit self-test, adaptation EEPROM slave
9d Control unit self-test, memory test slave
9E Control unit self-test, communication slave
9F Control unit self-test, knock detection IC 1
A0 Control unit self-test, knock detection IC
A1 Knock control
A2 Crankshaft/Camshaft position correlation, Cyl #5-8
A3 Control unit self-test, master resets
AA Secondary air system, flow too low
Ab Secondary air system, valve sticking
Ac VANOS pressure storage valve AD Starter switch input
AE Air-fuel adaptation, Cyl #1-4
AF Air-fuel adaptation, Cyl #5-8

b0 Air-fuel adaptation at idle, Cyl #1-4
b1 Air-fuel adaptation at idle, Cyl #5-8
b2 Catalyst system efficiency, Cyl #1-4
2F Engine RPM (TD) signal output
3A Sensor voltage supply 1
3b Sensor voltage supply 2
3c Pedal position sensor 1, master measurement
3d Pedal position sensor 2, master measurement
3F Secondary air switching valve
5A PreCat 02 sensor aging, Cyl #1-4
5b PreCat 02 sensor aging, Cyl #5-8
5c AfterCat 02 sensor aging, Cyl #1-4
5d AfterCat 02 sensor aging, Cyl #5-8
6A Brake light switch
6b Control unit self-test, pre-drive check of drive-by-wire system
6c Switching valve oil circuit left
6d Switching valve oil circuit right
6E Sport switch LED indicator
b3 Catalyst system efficiency, Cyl #5-8
b4 Tank leak detected
b5 Filler cap open
b6 Injection driver 1, over temp.
b7 Injection driver 2, over temp.
b8 Intake camshaft VANOS position control, Cyl #1-4
b9 Exhaust camshaft VANOS position control, Cyl #1-4
bA Ignition output stage, Cyl #1
bb Ignition output stage, Cyl #2
bc Ignition output stage, Cyl #3
bd Ignition output stage, Cyl #4
bE Ignition output stage, Cyl #5
bF Ignition output stage, Cyl #6

c0 Ignition output stage, Cyl #7
c1 Ignition output stage, Cyl #8
c2 Control unit self-test, cruise control shut-off
c3 Control unit self-test, torque manager monitoring
c4 Misfire, Cyl #1
c5 Misfire, Cyl #2
c6 Misfire, Cyl #3
c7 Misfire, Cyl #4
c8 Misfire, Cyl #5
c9 Misfire, Cyl #6
cA Misfire, Cyl #7
cb Misfire, Cyl #8
cc Misfire, multiple cylinders
cd Misfire during warm-up, Cyl #1
cE Misfire during warm-up, Cyl #2
cF Misfire during warm-up, Cyl #3

d0 Misfire during warm-up, Cyl #4

d1 Misfire during warm-up, Cyl #5
d2 Misfire during warm-up, Cyl #6
d3 Misfire during warm-up, Cyl #7
d4 Misfire during warm-up, Cyl #8
d5 Misfire during warm-up, multiple cylinders
d6 PreCat 02 sensor slow response, Cyl #1-4
d7 PreCat 02 sensor slow response, Cyl #5-8
d8 PreCat 02 sensor slow switching (rich to lean), Cyl #1-4
d9 PreCat 02 sensor slow switching (rich to lean), Cyl #5-8
dA PreCat 02 sensor signal size/amplitude, Cyl #1-4
db PreCat 02 sensor signal size/amplitude, Cyl #5-8

E4 Drive-by-wire, throttle control failure
E5 Drive-by-wire, throttle control failure
E6 Drive-by-wire, throttle position failure
E7 Control unit self-test, slave processor check
E8 Evaporative emissions purge valve functional check
F7 VANOS pressure accumulator valve
F8 Intake camshaft VANOS moving time, Cyl #1-4
F9 Exhaust camshaft VANOS moving time, Cyl #1-4
FA Intake camshaft VANOS sealing, Cyl #1-4

Fb Exhaust camshaft VANOS sealing, Cyl #1-4
Fc Intake camshaft VANOS moving time, Cyl #5-8

Fd Exhaust camshaft VANOS moving time, Cyl #5-8
FE Intake camshaft VANOS sealing, Cyl #5-8

Table 19

01 Ignition Coil, Cyl #2
02 Ignition Coil, Cyl #4
03 Ignition Coil, Cyl #6
05 Fuel Injector, Cyl #2
06 Fuel Injector, Cyl #1
08 Air mass sensor
12 Exhaust camshaft position sensor
13 Exhaust camshaft solenoid valve
15 Intake camshaft solenoid valve
16 Fuel Injector, Cyl #3
17 Fuel Injector, Cyl #6
18 Fuel Injector, Cyl #4
19 PreCat 02 sensor heater insufficient, Cyl #1-3
21 Fuel Injector, Cyl #5
23 Secondary air pump relay
24 Main relay
25 Main relay switching delay
26 Clutch switch
27 BLS/BTS plausibility
30 Control module self-test, control module defective
31 Control module self-test, torque monitoring
32 Control module self-test, speed monitoring

33 Control module self-test, speed monitoring
34 Exhaust flap
35 Idle speed actuator (open)
37 PreCat 02 sensor heater insufficient, Cyl #4-6
38 Ignition feedback - shunt resistor
39 Knock Sensor, Cyl #1-3
41 Intake camshaft position sensor
42 Control module self-test, control module defective
43 Control module self-test, control module defective
44 Evaporative emission system, purge control valve

45 Fuel pump relay
46 Control module self-test, control module defective
47 Control module self-test, control module

48 Control module self-test, control module defective
53 Crankshaft Sensor
60 Secondary air system, pump not active
61 Secondary air system, flow too low63

Secondary air system, valve jammed open
62 Secondary air system, flow too high
64 Memory self-test, control module defective
67 Intake camshaft VANOS, over-advanced or system pert.
68 Exhaust camshaft VANOS, over-advanced or system pert.
69 Intake camshaft VANOS, over-retarded
70 Throttle position sensor 1
71 Throttle position sensor 2
72 Pedal position sensor, plausibility
73 Throttle position sensor, adaptation
75 Pedal position sensor, range/performance
76 Throttle position sensor 1, plausibility, range, or performance
77 Throttle position sensor 2, plausibility,
99 AfterCat 02 sensor voltage, Cyl #4-6 defective

0A Engine coolant temperature
0b Engine coolant temperature, radiator outlet
0c Engine coolant temperature, Plausibility
0E Intake air temperature
1b Idle speed actuator (close)
1d Ignition Coil, Cyl #1
1E Ignition Coil, Cyl #3
1F Ignition Coil, Cyl #5
2A MFL signal redundancy
2b MFL seesaw key
2d MFL bit toggle
2F Torque limitation, safety level 1
3A Control module self-test, control module defective
3b Knock Sensor, Cyl #4-6
3d AfterCat 02 sensor heater insufficient, Cyl #4-6
3E Secondary air system, switching valve circuit
3F Control module self-test, control module defective
4A A/C compressor relay
4F AfterCat 02 sensor heater insufficient, Cyl #1-3
5E Secondary air system, air mass
5F Secondary air system, tube blocked
6A Exhaust camshaft VANOS, over-retarded
6d Throttle valve control circuit
6E Pedal position sensor 1
6F Pedal position sensor 2

range, or performance
78 Brake and Pedal positions not plausible
80 EWS signal
81 Timeout, SSG
82 Timeout, CAN - ASC1
83 Timeout, CAN - INSTR2
84 Timeout, CAN - INSTR3
85 Timeout, CAN - ASC3
86 SSG intervention, plausibility
87 Throttle position sensor, adaptation selftest
88 Throttle position sensor, adaptation selftest
92 Pedal position sensor 1, supply voltage
93 Pedal position sensor 2, supply voltage
95 Air mass sensor, range/performance
96 PreCat 02 sensor voltage, Cyl #1-3
97 PreCat 02 sensor voltage, Cyl #4-6
98 AfterCat 02 sensor voltage, Cyl #1-3
7A Oil temperature sensor
7b Map controlled thermostat
7c DISA control
7d E-fan
7E DM-TL Switching solenoid
8c DM-TL pump control circuit
8E DM-TL pump current
8F DM-TL leak detected

A0 Throttle valve position controller, stuck temporarily
A1 Throttle valve position controller, stuck permanently
A2 Throttle valve position controller, control deviation
A8 Coolant thermostat jammed open

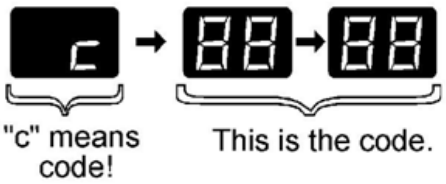
bA 02 sensor heating during regulation, Cyl #1-3
bb 02 sensor heating during regulation,
bc PreCat 02 sensor heater circuit, Cyl #1-3
bd PreCat 02 sensor heater circuit, Cyl #4-6
bE AfterCat 02 sensor heater circuit, Cyl #1-3
bF AfterCat 02 sensor heater circuit, Cyl #4-6

c4 Pressure sensor circuit
c5 Pressure sensor circuit
c6 Catalytic converter efficiency, Cyl #1-3
c7 Catalytic converter efficiency, Cyl #4-6
cA 02 sensor control limit, Cyl #1-3
cb 02 sensor control limit, Cyl #4-6

cc	Idle control system, idle speed not plausible
d1	EWS message
d2	Ignition feedback faulty (>2 cylinders)
d3	Idle control valve mechanically stuck
d6	Vehicle speed signal not present
d7	AfterCat 02 sensor disconnection, Cyl #1-3
d8	AfterCat 02 sensor disconnection, Cyl #4-6
d9	CAN timeout (EGS1)
db	CAN bus offline
dc	AfterCat 02 sensor slow response time, Cyl #1-3
dd	AfterCat 02 sensor slow response time, Cyl #4-6
dE	Coolant temp too low for closed loop operation
EA	Catalyst efficiency below threshold, Cyl #4-6
Eb	PreCat fuel trim system, Cyl #1-3
Ec	PreCat fuel trim system, Cyl #4-6
EE	Misfire, Cyl #1
EF	Misfire, Cyl #2
F0	Misfire, Cyl #3
F1	Misfire, Cyl #4
F2	Misfire, Cyl #5
F3	Misfire, Cyl #6
F4	Flywheel adaptation, segment timing faulty
dF	AfterCat 02 sensor slow switching time, Cyl #1-3
E0	AfterCat 02 sensor slow switching time, Cyl #4-6
E1	AfterCat fuel trim system, Cyl #1-3
E2	AfterCat fuel trim system, Cyl #4-6
E3	02 sensor adaptation limit, Cyl #1-3
E4	02 sensor adaptation limit, Cyl #4-6
E5	PreCat 02 sensor slow response time, Cyl #1-3
E6	PreCat 02 sensor slow response time, Cyl #4-6
E7	PreCat 02 sensor slow switching Time, Cyl #1-3
E8	PreCat 02 sensor slow switching Time, Cyl #4-6
E9	Catalyst efficiency below threshold, Cyl #1-3
F5	Secondary air system flow too low, Cyl #1-3
F6	Secondary air system flow too low, Cyl #4-6
F7	Secondary air system valve stuck open
F8	AfterCat 02 sensor, signal after deceleration not plausible, Cyl #1-3
F9	AfterCat 02 sensor, signal after deceleration not plausible, Cyl #4-6
FA	Functional check purge valve

When codes starts with a "c" ***(applies only to 2002 and later BMWs)***

A starting "**c**" indicates a four digit code is coming.
Example: code **8888** would be displayed as follows:



It would cycle "**c**-**88**-**88**" in a loop until "OK" button is pressed. If there is no "**c**" then the codes are only two digits long.

***Table* 20**

2712 DMTL magnetic valve
2715 PreCat 02 sensor heater control, Bank 2
2716 AfterCat 02 sensor heater control, Bank 1
2717 AfterCat 02 sensor heater control, Bank 2
2718 Camshaft generator: positioning
2719 Crank shaft sensor: cycle duration
271A PreCat 02 sensor signal, Bank 1
271c AfterCat 02 sensor signal, Bank 1
271d PreCat 02 sensor heater control, Bank 1
271F 02 sensor aging bank 1: period duration
2720 02 sensor aging bank 1: switching time
2721 AfterCat 02 sensor aging, Bank 1
2722 PreCat 02 sensor signal, Bank 2
2724 AfterCat 02 sensor signal, Bank 2
2725 02 sensor aging bank 2: period duration
2726 02 sensor aging bank 2: switching time
2727 AfterCat 02 sensor aging, Bank 2
2734 TPS 1: signal not plausible against MAF
2735 TPS 2: signal not plausible against MAF
2737 EWS 3.3 manipulation protection
2738 Catalyst bank 1
273b Catalyst bank 1 via NOx-sensor
273c Catalyst bank 2 via NOx-sensor
273d Catalyst bank 2
2740 Pedal 1: voltage supply
2741 Pedal 2: voltage supply
2742 Misfire Cyl. 1
2743 Misfire Cyl. 5
2744 Misfire Cyl. 3
2745 Misfire Cyl. 6
2746 Misfire Cyl. 2
2747 Misfire Cyl. 4
274E Misfire on several cylinders
2750 Electronic throttle controller: momentarily sticking
2751 Electronic throttle controller: permanently sticking
2752 Electronic throttle controller: hard movement
2753 Ignition coil cyl. 1
2754 Ignition coil cyl. 5
2755 Ignition coil cyl. 3
2756 Ignition coil cyl. 6
2757 Ignition coil cyl. 2
2758 Ignition coil cyl. 4
2760 Secondary air system
2761 Secondary air system
2762 Secondary air valve
2764 Relay sec.air pump: controller
2765 Solenoid valve secondary air: activation
2766 Camshaft sensor inlet: signal time
2767 Camshaft sensor outlet: signal time
2768 Camshaft sensor inlet: phase position
276c Camshaft sensor outlet: phase position
276d Function-check tank venting
2770 Secondary air heated film air mass sensor
2772 TEV: controller

2774 Engine cut off time
2777 DME-self test: AD-converter
2778 Clutch switch
2779 DME-self test: RAM
2783 Heated film at air mass measuring sensor
2786 TPS 1
2787 TPS 2
2788 Vehicle speed
278b Coolant temp sensor
278c Intake air sensor
278d Radiator outlet temp sensor
278F Generator: under uproar
2790 Coolant-outlet-temperature: implausible
2794 Electronic throttle controller
2796 Electronic throttle controller: adaptation wrong
279b Mapped thermostat cooling: mechanical
279c Mapped thermostat cooling: control
279d Engine fan: activation
279E Exhaust flap: control
27A0 E-box fan: control
27A1 Electronic throttle controller: start check
27A4 Interface EWS 3.3 - DME
27A5 Throttle valve: new adaptation
27A6 Injection valve cyl. 1
27A7 Injection valve cyl. 5
27A8 Injection valve cyl. 3
27A9 Injection valve cyl. 6
27AA Injection valve cyl. 2
27Ab Injection valve cyl. 4
27b2 Brake-light-switch: signal
27b4 Ambient-pressure sensor
27b5 Camshaft control inlet bank1: controller
27b7 Gas pump relay: control
27b9 PreCat 02 sensor voltage increase, Bank1
27bA PreCat 02 sensor voltage increase, Bank2
27bd Camshaft control outlet bank1: controller
27c2 AC-compressor controller
27c3 Thermal oil level sensor
27c4 Main relay
27c5 Brake-light-test-switch: signal
27c7 Main relay: switching delay
27cA DMTL pump: controlled
27cc DMTL: leakage
27cd DMTL: module failure
27cF Ignition cyl. 1
27d0 Ignition cyl. 5
27d1 Ignition cyl. 3
27d2 Ignition cyl. 6
27d3 Ignition cyl. 2
27d4 Ignition cyl. 4
27d6 Idle controller: position closed
27d7 Idle controller: position open
27d9 DMTL heater: controlled
27dA BSD-generator

27db Accelerator pedal and brake pedal: signal implausible
27dc EWS 3.3 exchange code storing
27dd Temperature sensor engine coolant: gradient
27dE Temperature sensor engine coolant: signal
27dF Temperature sensor engine coolant: constant signal
27E0 Crankshaft sensor: segment time measurement
27E2 Knock sensor 1
27E3 Knock sensor 2
27Eb Telegram (EGS 2) missing from EGS-ECU
27Ec Telegram (EGS 1) missing from EGS-ECU
27F2 Petrol tank level implausible
27F7 Pedal input sensor 1
27F8 Pedal input sensor 2
27F9 Start auto.: control
27Fb Controlled air management: activation

2800 Telegram (I-combi 2) missing from combi-ECU
2801 Idle-speed implausible (air leakage)
2804 Driving speed regulation: requirement
2805 Switch driving speed regulation: signal
2806 Driving speed regulation: time limit data transmission reached
2807 PWM-potentiometer: signal
2808 PWM: signal
2809 Telegram (I-combi 3) missing from combi-ECU
280b Telegram (ASC 1) missing from ASC-ECU
280c Telegram (ASC 3) missing from ASC-ECU
280d Telegram (LWS) missing from LWS-ECU
280E Telegram (SMG 1) missing from SMG-ECU
280F Message (ASC 4) missing from ASC-ECU
2811 Local CAN communication error
2812 Oil temperature
281A Telegram (TxU) missing
281b Telegram (EKP) missing from EKP-ECU
281c Bit serial data interface (BSD): signal
281d BSD generator: signal
281E Variable air intake system: activation
282F PT-CAN communication error
2830 DME-self test: checksum
2831 DME self diagnostics: CPU monitoring
283A Oil condition sensor
283F Oil pressure switch: signal implausible
2869 DME self diagnostics: RAM-check failed
286A DME self diagnostics: knock sensor module
286b DME self diagnostics: multi output module
2882 Mixture preparation bank1
2883 Mixture preparation bank2
2892 Misfire with low tank volume
2893 Internal ECU temperature
2894 Irreversible ecu error
2895 Crank shaft sensor: signal
2896 Camshaft sensor: input-signal
2897 Camshaft sensor: output-signal
2898 AfterCat 02 sensor signal, Bank 1
2899 AfterCat 02 sensor signal, Bank 2

289A PreCat 02 sensor heater function, Bank 1
289b PreCat 02 sensor heater function, Bank 2
289c AfterCat 02 sensor heater function, Bank1
289d AfterCat 02 sensor heater function, Bank2
289E PreCat 02 sensor, Bank 1
289F PreCat 02 sensor, Bank 2
28A1 Driving speed regulation
28A2 Air path
28A4 Engine-speed
28A5 Pedal value
28A7 Telegram monitoring: NOx-sensor 1
28A8 Telegram monitoring: NOx-sensor 2
28AA Idle speed regulator
28Ab External torque requirement: monitoring
28Ac Nominal torque
28Ad Actual torque
28AE Torque limit
28b1 Rpm limit
28b2 Rpm limiting: reset
28b3 Throttle flap: cont. adaptation
28b4 Sport button
28b5 Sound flap: signal
28b6 Inlet-camshaft bank1: mechanical
28b8 Exhaust camshaft bank1: mechanical
28bA Inlet-camshaft bank1: rough-running
28bc Exhaust camshaft bank1: stiff
28bd Intake camshaft sensor: latching
28bE Exhaust camshaft sensor: latching
28bF NOx-sensor 1
28c0 NOx-sensor 2
28c1 PreCat 02 sensor, Bank 1
28c2 PreCat 02 sensor, Bank 2
28c3 PreCat 02 sensor heater function, Bank 1
28c4 PreCat 02 sensor heater function, Bank 2
28c5 AfterCat 02 sensor system check, Bank 1
28c6 AfterCat 02 sensor system check, Bank 2
28cA Ozone exchange: too low
28cb Ozone sensor 2
28cc Ozone sensor 1
28cF Fuel pump: emergency switch off
28d0 Fuel pump
28dd Air mass system
28E6 02 sensor analysis unit/self test, Bank 1
28E7 02 sensor analysis unit/self test, Bank 2
28E8 02 sensor trim control, Bank 1
28E9 02 sensor trim control, Bank 2
28EA AfterCat 02 sensor signal, Bank 1
28Eb AfterCat 02 sensor signal, Bank 2
28Ec AfterCat 02 sensor (after full load) Bank 1
28Ed AfterCat 02 sensor (after full load) Bank 2
28F0 AfterCat 02 sensor system check, Bank 1
28F1 AfterCat 02 sensor system check, Bank 2
28F2 02 sensor trim control, Bank 1
28F3 02 sensor trim control, Bank 2

28F4 PreCat 02 sensor cold test, Bank 1
28F5 PreCat 02 sensor cold test, Bank 2
28F6 AfterCat 02 sensor cold test, Bank 1
28F7 AfterCat 02 sensor cold test, Bank 2
28F9 Roughness: segment time measurement
28FA Torque in shift phase
28Fb Active Cruise Control (ACC)
28FF DME-self test

2900 DME-self test
293c Telegram monitoring: torque requirement AFS
293d Telegram monitoring: EKP
2947 Telgram monitoring: torque request ACC
2948 Telegram monitoring: ARS
2949 Telegram monitoring: CAS
294A Telgram monitoring: torque request SMG
294b Telegram monitoring: speed DSC
294c Telegram monitoring: status DSC
294d Telgram monitoring: torque request EGS
294E Telegram monitoring: transmission data EGS/SMG
294F Telegram monitoring: torque request SMG
2950 Telegram monitoring: AC
2951 Telegram monitoring: temp. kombi
2952 Telegram monitoring: km-count kombi
2953 Telegram monitoring: status kombi
2954 Telegram monitoring: batt.voltage power module
2955 Telegram monitoring: charge voltage power module
2956 Telegram monitoring: cruise control
2957 Telegram monitoring: steering angle
2958 Telegram monitoring: sport switch
2960 PreCat 02 sensor, Bank 1
2961 PreCat 02 sensor, Bank 2
2962 PreCat 02 sensor dynamics, Bank 1
2963 PreCat 02 sensor dynamics, Bank 2
2964 PreCat 02 sensor ceramic temp, Bank 1
2965 PreCat 02 sensor ceramic temp, Bank 2
2966 PreCat 02 sensor signal, Bank 1
2967 PreCat 02 sensor signal, Bank 2
296A PreCat 02 sensors switched
296b AfterCat 02 sensors switched
2973 PreCat 02 sensor wires/lines, Bank 1
2974 PreCat 02 sensor wires/lines, Bank 2
2986 PreCat 02 sensor system check, Bank 1
2987 PreCat 02 sensor system check, Bank 2
2988 PreCat 02 sensor system check, Bank 1
2989 PreCat 02 sensor system check, Bank 2
2990 NOx-sensor 1: system check
2991 NOx-sensor 2: system check
2992 NOx-sensor 1: system check dynamic
2993 NOx-sensor 2: system check dynamic
2994 NOx-sensor 1: heater power
2995 NOx-sensor 2: heater power
2996 NOx-sensor 1: system check plausibility
2997 NOx-sensor 2: OBD-II-diagnostics plausibility

2998 NOx-sensor 1: system check
2999 NOx-sensor 2: system check
299A Error management EGS
299b Battery sensor: signal
299c Battery sensor: Function
299d Battery sensor: data transmission
299E AfterCat 02 sensor signal, Bank 1
299F AfterCat 02 sensor signal, Bank 1
29A0 AfterCat 02 sensor signal, Bank 1
29A1 AfterCat 02 sensor signal, Bank 1
29A2 PreCat 02 sensor signal, Bank 2
29A3 PreCat 02 sensor signal, Bank 2
29A4 PreCat 02 sensor heater control, Bank 1
29A5 PreCat 02 sensor heater control, Bank 2
29A6 PreCat 02 sensor signal, Bank 1
29A7 PreCat 02 sensor signal, Bank 1
29A8 Telegram monitoring failure: Network failure power management
29A9 Telegram monitoring failure: Battery Power management
29Ab Torque request with CAN
29AE Tank flap
29AF Telegram and signal monitoring KL.15
29b5 Secondary air system
29b6 Cyl. switch off
29cc Misfire, several Cyls
29cd Misfire, Cyl. 1
29cE Misfire, Cyl. 2
29cF Misfire, Cyl. 3
29d0 Misfire, Cyl. 4
29d1 Misfire, Cyl. 5
29d2 Misfire, Cyl. 6
29d9 Misfire in case of tank filling level too low
29dA Crankshaft sensor, segment adaptation
29db Engine roughness, segment time measurement
29dc Cyl. injection switch-off
29E0 Fuel mixture control
29E1 Fuel mixture control 2
29E2 Fuel injection rail, pressure sensor signal
29E5 Fuel mixture adaptation, upper speed range
29E6 Fuel mixture adaptation 2, upper speed range
29F1 Fuel pressure, plausibility
29F2 Fuel high pressure system, fuel pressure
29F3 Fuel pressure sensor, electrical
29F4 Cat conversion
29F5 Cat conversion 2
29F6 Cat conversion, complete system: below threshold
29F7 Cat conversion 2, complete system: below threshold
29FF Secondary air system

2A00 Secondary air system
2A01 Secondary air valve, mechanics
2A02 Secondary air valve, input signal
2A03 Secondary air pump relay, input signal
2A04 Secondary air mass sensor, plausibility
2A07 Secondary air valve, mechanics

2A0c Exhaust fume return, system function
2A0d Exhaust fume return valve, input signal
2A0E Exhaust fume return valve, deviation position controlling
2A0F Exhaust fume return valve, adaptation
2A10 Exhaust fume return valve, signal
2A12 DMTL diagnosis module tank leakage, magnetic valve, input signal
2A13 DMTL diagnosis module tank leakage, leakage diagnosis pump, input signal
2A15 DMTL diagnosis module tank leakage, fine leakage
2A16 DMTL diagnosis module tank leakage, finest leakage
2A17 DMTL diagnosis module tank leakage, system failure
2A18 DMTL diagnosis module tank leakage, heating: input signal
2A19 Tank ventilation valve, input signal
2A1A Tank ventilation system, function
2A1b Tank lid
2A1c Tank filling level, plausibility
2A26 Cat conversion during shift operation
2A27 Cat 2, conversion during shift operation
2A29 Fuel low pressure sensor, Signal
2A2b Fuel mixture control
2A2c Fuel mixture control 2
2A2d Fuel low pressure system, fuel pressure
2A2E Mixture control
2A2F Mixture control 2
2A30 Valvetronic, eccentric shaft sensor: power supply
2A31 Valvetronic, eccentric shaft sensor: guidance
2A32 Valvetronic, eccentric shaft sensor: reference
2A33 Valvetronic, eccentric shaft sensor: guidance
2A34 Valvetronic, eccentric shaft sensor: reference
2A35 Valvetronic, eccentric shaft sensor: guidance
2A36 Valvetronic, eccentric shaft sensor: reference
2A37 Valvetronic, eccentric shaft sensor: plausibility
2A38 Valvetronic, actuator: sluggish or open circuit
2A39 Valvetronic, adjustable range
2A3A Valvetronic, internal error
2A3b Valvetronic, servo motor: rotation direction
2A3c Valvetronic relay, input signal
2A3d Valvetronic, adjustment motor: input signal
2A3E Valvetronic, servo motor: overload
2A3F Valvetronic, servo motor: power supply
2A40 Valvetronic, thermic overload protection
2A41 Valvetronic, electronic overload protection
2A42 Valvetronic, position at restart: plausibility
2A43 Valvetronic, thermo overload protection: warning threshold
2A44 Valvetronic, output limitation
2A45 Valvetronic, adjustment motor: plausibility
2A46 Valvetronic, adaptation
2A47 Valvetronic, eccentric shaft sensor: plausibility
2A48 Valvetronic, Temp. Plausibility
2A49 Valvetronic, mechanical
2A4A Valvetronic-servo motor
2A76 Valvetronic, matching voltage
2A77 Ecu, internal error: Valvetronic-output
2A80 Intake Vanos variable cam control test, input signal
2A81 Intake VANOS, Control 2

2A82 Intake Vanos variable cam control test
2A85 Exhaust VANOS variable cam control test
2A86 Exhaust VANOS, Control 2
2A87 Exhaust Vanos variable cam control test, mechanics
2A8A Intake VANOS, Adaptation limit stop
2A8c Exhaust VANOS, Adaptation limit stop
2A92 Exhaust VANOS 1, control
2A93 Intake VANOS, control
2A94 Crankshaft sensor, signal
2A95 Crankshaft sensor, synchronization
2A96 Crankshaft sensor, tooth failure2A97 crankshaft sensor, gap failure
2A98 Crank shaft - intake camshaft, correlation
2A99 Crank shaft - exhaust camshaft, correlation
2A9A Camshaft sensor intake, signal
2A9b Camshaft sensor exhaust, signal
2A9c Crank shaft sensor, electric
2A9E Camshaft sensor intake, synchronization
2A9F Camshaft sensor exhaust, synchronization
2AA0 Camshaft sensor intake, signal
2AA1 Camshaft sensor exhaust, signal
2AA2 Camshaft sensor intake, gap loss
2AA3 Camshaft sensor exhaust, loss
2AA4 Camshaft sensor intake, tooth failure
2AA5 Camshaft sensor exhaust, tooth failure
2AA8 Variable suction unit adjustment motor: input signal
2AA9 Variable suction unit adjustment motor 2: input signal
2AAA Variable suction unit, plausibility
2AAb Variable suction unit, self diagnosis
2AAc Variable suction unit 2, self diagnosis
2AAd Fuel pump, emergency off
2AAE Fuel pump
2AAF Fuel pump, plausibility
2Ab2 DME, internal error: RAM
2Ab3 DME, internal error: checksum
2Ab4 DME, internal error: RAM-checksum
2Ab5 DME, internal error: knock sensor
2Ab6 DME, internal error: output chip
2Abc Charging pressure sensor, electrical
2Abd Intake pressure sensor, re-running
2Ac1 Sound flap, control
2Ac6 Sport switch signal
2Ac7 Sport switch illumination, electric
2Acb DME digital motor electronics main relay, input signal
2Acc DME digital motor electronics main relay, switch delay
2Ad0 Gear control
2Ad8 EAC-sensor, control
2Ad9 EAC-sensor, coding
2AdA EAC-sensor, electrical error
2Adb EAC-sensor, communication
2Adc EAC-Sensor, Communication
2AdF Idle running control, speed
2AE0 Idle running control during cold start
2AE1 Demand for power output in idle running too high
2AE4 Engine ventilation-heater relays, control

2AE5 Idle switch position OPEN
2AE6 Idle switch position CLOSE
2AF0 Nitric oxide sensor, heating
2AF2 Nitric oxide sensor, Lambda linear
2AF4 NOX sensor, electrical
2AF6 Nitric oxide sensor, Lambda binary

2b00 Over speed, lean-range
2c24 PreCat 02 sensors switched
2c27 PreCat 02 sensor system check, Bank 1
2c28 PreCat 02 sensor system check, Bank 2
2c2b PreCat 02 sensor system check, Bank 1
2c2c PreCat 02 sensor system check, Bank 2
2c2d PreCat 02 sensor thrust control, Bank 1
2c2E PreCat 02 sensor thrust control, Bank 2
2c31 PreCat 02 sensor trim control, Bank 1
2c32 PreCat 02 sensor trim control, Bank 2
2c37 PreCat 02 sensor heater connection, Bank 1
2c38 PreCat 02 sensor heater connection, Bank 2
2c39 PreCat 02 sensor dynamics, Bank 1
2c3A PreCat 02 sensor dynamics, Bank 2
2c3b PreCat 02 sensor disconnected, Bank 1
2c3c PreCat 02 sensor disconnected, Bank 2
2c3d PreCat 02 sensor lines/wires, Bank 1
2c3E PreCat 02 sensor lines/wires, Bank 2
2c3F DME, internal error: lambda probe (Bank 1) analyzing chip
2c40 DME, internal error: lambda probe (Bank 2) analyzing chip
2c41 DME, internal error: lambda probe Bank 1
2c42 DME, internal error: lambda probe Bank 2
2c6A AfterCat 02 sensors switched
2c6b AfterCat 02 sensor system check, Bank 1
2c6c AfterCat 02 sensor system check, Bank 2
2c6d AfterCat 02 sensor aging, Bank 1
2c6E AfterCat 02 sensor aging, Bank 2
2c6F AfterCat 02 sensor signal at full load, Bank 1
2c70 AfterCat 02 sensor signal at full load, Bank 2
2c73 AfterCat 02 sensor signal, Bank 1
2c74 AfterCat 02 sensor signal, Bank 2
2c75 AfterCat 02 sensor signal, Bank 1
2c76 AfterCat 02 sensor signal, Bank 2
2c77 AfterCat 02 sensor signal, Bank 1
2c78 AfterCat 02 sensor signal, Bank 2
2c79 AfterCat 02 sensor signal, Bank 1
2c7A AfterCat 02 sensor signal, Bank 2
2c7b AfterCat 02 sensor signal, Bank 1
2c7c AfterCat 02 sensor signal, Bank 2
2c7E AfterCat 02 sensor trim control, Bank 1
2c7F AfterCat 02 sensor trim control, Bank 2
2c87 Exhaust gas temp sensor signal
2c92 Exhaust gas temperature sensor, electric
2c93 Exhaust gas temperature sensor, plausibility
2c9c PreCat 02 sensor heater input signal, Bank 1
2c9d PreCat 02 sensor heater input signal, Bank 2
2c9E AfterCat 02 sensor heater input signal, Bank 1

2c9F AfterCat 02 sensor heater input signal, Bank 2
2cA6 PreCat 02 sensor function, Bank 1
2cA7 PreCat 02 sensor function, Bank 2
2cA8 AfterCat 02 sensor function, Bank 1
2cA9 AfterCat 02 sensor function, Bank 2
2cAA PreCat 02 sensor temperature, Bank 1
2cAb PreCat 02 sensor temperature, Bank 2
2cEc Throttle positioner, stuck for an intermediate time
2cEd Throttle positioner, permanently stuck
2cEE Throttle positioner, sluggish
2cEF Throttle positioner, input signal
2cF6 Throttle valve potentiometer 1, plausibility with regard to air mass
2cF7 Throttle valve potentiometer 2, plausibility with regard to air mass
2cF9 Throttle valve potentiometer 1
2cFA Throttle valve potentiometer 2
2cFb Throttle valve adaptation value
2cFc Throttle valve, start test
2cFd Throttle valve adaptation value missing
2cFE Throttle valve, continuous adaptation
2d06 Air mass system
2d07 Throttle flap 1
2d09 Throttle valve
2d0b Throttle valve heater, Relay
2d0c Throttle valve, defrosting
2d0E Air mass meter, electrical
2d0F Air mass meter, signal
2d15 Air mass sensor, metering range
2d16 Air mass meter, signal
2d18 Manipulation protection, max air mass
2d1b Accelerator pedal module, pedal sensor signal 1
2d1c Accelerator pedal module, pedal sensor signal 2
2d1d Accelerator pedal module, pedal sensor 1, voltage supply
2d1E Accelerator pedal module, pedal sensor 2, voltage supply
2d1F Accelerator pedal module, pedal sensor potentiometer, signal
2d20 Accelerator pedal module, pedal sensor, plausibility between signal 1 and signal 2
2d28 Differential pressure sensor, suction pipe: Signal
2d29 Differential pressure sensor, suction pipe: plausibility
2d2A Differential pressure sensor, suction pipe: adaptation
2d2b Pressure sensor of the intake pipe, re-running
2d2E Angle of throttle valve - intake pipe under pressure, correlation
2d33 Absolute pressure sensor, intake pipe: Signal
2d35 Absolute pressure sensor, intake pipe: adaptation
2d50 DME digital motor electronics, internal failure: driving speed control
2d51 Air path control
2d52 DME digital motor electronics, internal failure: control motor speed
2d53 DME digital motor electronics, internal failure: control speed limitation
2d54 DME, internal error: control over speed trip unit reset
2d55 DME digital motor electronics, internal failure: control driver pedal module
2d56 DME digital motor electronics, internal failure: control idle running
2d57 DME digital motor electronics, internal failure: control external torque requirement
2d58 DME digital motor electronics, internal failure: control nominal torque?
2d59 DME digital motor electronics, internal failure: control actual torque??
2d5A Control motor torque limitation
2d5b DME, internal error: torque control

2d5c DME digital motor electronics, internal failure: control hardware
2d5F ECU, internal error: Reset
2d60 Fuel mass, monitoring
2d61 Throttle valve, monitoring
2d64 Control stoichiometric mixture
2d67 DME digital motor electronics, internal failure: control processors
2db5 Driving speed control, signal
2db6 Cruise control, switch multifunction steering wheel
2db7 Driving speed control, time limit of data transfer achieved
2dbE Active speed control, locked for driving cycle
2dc0 Longitudinal dynamics management
2dc3 Control Klemme 15
2dc5 Torque requirement over CAN, plausibility
2dc6 Fuel tank level, plausibility
2dc8 Message of electronic gear control? missing, electronic gear control? 1
2dc9 Message of electronic gear control? missing, electronic gear control? 2
2dcc Message of ASC/DSC anti slip control/dynamic stability control missing, ASC anti slip control 1
2dcd Message of ASC/DSC anti slip control/dynamic stability control missing, ASC anti slip control 3
2dcE Message of ASC/DSC anti slip control/dynamic stability control missing, ASC 4
2dd0 Message of instrument cluster missing, I-Kombi 2
2dd1 Message of instrument cluster missing, I-Kombi 3
2dd2 Message of LWS steering angle sensor control unit missing, LWS
2dd3 Message of SMG-control unit missing, SMG 1
2dd4 Telegram (TxU) missing
2dd5 Message from EKP missing
2dE0 Message of electrical fuel pump missing, EKP
2dE1 Fuel level sensor, right: Signal
2dE2 Fuel level sensor, left: Signal
2dE3 Message instrument panel missing, I-Kombi 7
2dEb Power management, vehicle wiring system control
2dEc Power management, battery control
2dEd Power management, standby current control

2E18 Ignition, Cyl. 1
2E19 Ignition, Cyl. 2
2E1A Ignition, Cyl. 3
2E1b Ignition, Cyl. 4
2E1c Ignition, Cyl. 5
2E1d Ignition, Cyl. 6
2E24 Ignition coil, Cyl. 1
2E25 Ignition coil, Cyl. 2
2E26 Ignition coil, Cyl. 3
2E27 Ignition coil, Cyl. 4
2E28 Ignition coil, Cyl. 5
2E29 Ignition coil, Cyl. 6
2E30 Injection valve Cyl. 1, input signal
2E31 Injection valve Cyl. 2, input signal
2E32 Injection valve Cyl. 3, input signal
2E33 Injection valve Cyl. 4, input signal
2E34 Injection valve Cyl. 5, input signal
2E35 Injection valve Cyl. 6, input signal
2E68 Knock sensor signal 1
2E69 Knock sensor signal 2
2E6A Knock sensor signal 3

2E74 Mixture adaptation, injector ageing: Bank 1
2E75 Mixture adaptation, injector ageing: Bank 2
2E77 Ignition, voltage supply
2E7c Bit serial data interface, signal
2E81 Electrical coolant pump, speed deviation
2E82 Electrical coolant pump, shut down
2E83 Electrical coolant pump, power reduced operation
2E84 Electrical coolant pump, communication
2E85 Electrical coolant pump, communication
2E8b Intelligent battery sensor, signal
2E8c Intelligent battery sensor, function
2E8d Intelligent battery sensor, signal transmission
2E8E Intelligent battery sensor, communication
2E96 Generator, under excitation
2E97 Generator
2E98 Generator, communication
2E9F Oil condition sensor
2EA1 Oil condition sensor, communication
2EAE Message of nitrogen oxide sensor 1 missing
2EAF Message of nitrogen oxide sensor 2 missing
2Ec2 LIN-Bus, communication
2Ecb Generator, emission worsening
2Ecc Generator, communication
2Ecd Generator, electric
2EcE Generator, Plausibility: electrical
2EcF Generator, over temperature
2Ed0 Generator, plausibility: temperature
2Ed1 Generator, mechanical
2Ed2 Generator, controller false
2Ed3 Generator, type false
2EE0 Coolant temperature sensor, Signal
2EE1 Coolant temperature sensor, plausibility
2EE2 Coolant temp sensor, plausibility: Signal constant
2EE3 Coolant temp sensor, plausibility: Gradient
2EE6 Coolant temperature sensor, metering range
2EEA Temperature sensor radiator outlet, signal
2EEb Temperature sensor radiator outlet, plausibility, gradient
2EEc Temperature sensor radiator outlet, plausibility
2EF4 Map thermostat, mechanics
2EF5 Map thermostat, input signal
2EFE Electrical fan, input signal
2EFF Electrical fan, self diagnosis

2F08 Inlet air temperature sensor, signal
2F09 Inlet air temperature sensor, plausibility
2F0A Inlet air temperature sensor turbo charger, signal
2F0c Intake air temperature, signal: Gradient
2F0d Radiator blind, input signal, (GLF)
2F0F Radiator blind, bottom
2F10 Radiator blind, bottom
2F11 Radiator blind, top
2F12 Air conditioning compressor, input signal
2F44 EWS manipulation protection
2F45 Interface EWS-DME

2F46 EWS code-saving
2F47 EWS irreversible ecu error
2F49 EWS manipulation protection
2F4A Interface EWS-DME electronic vehicle immobilization/digital motor electronics
2F4b DME digital motor electronics, internal failure: EWS (electronic vehicle immobilization) data
2F4c Message EWS-DME digital motor electronics electronic vehicle immobilization-digital motor electronics failure
2F4E Vehicle speed, signal
2F4F Vehicle speed, plausibility
2F58 Start automatics, input signal
2F63 Brake light switch, plausibility
2F64 Brake light test switch, plausibility
2F65 Brake booster, system check
2F66 Brake booster, electric ATIC39
2F67 Clutch switch, signal
2F6c Exhaust flap, input signal
2F71 E-box-fan, input signal
2F76 Ambient pressure sensor, signal
2F77 Ambient pressure sensor, plausibility
2F79 Ambient pressure sensor, re-running
2F7A Ambient pressure sensor, re-running
2F7b Oil pressure switch, plausibility
2F80 Motor shutoff time, plausibility
2F85 DME digital motor electronics, internal failure: inside temperature sensor, signal
2F8F Accelerator pedal module and brake pedal, plausibility
2F94 Fuel pump relay, input signal
2F99 Ambient temperature sensor, plausibility
2F9A Ambient temperature sensor, communication
2F9E Thermal oil level sensor
2FA3 Coding missing
2FA4 Wrong data set
2FAb Active engine bearing
2FAc Active engine bearing 2, electrical
2Fbc Fuel pressure control valve, signal
2Fbd Fuel pressure steuer ventil, plausibility
2FbE Fuel pressure after motor stop
2FbF Fuel pressure at injection release
2Fc0 Fuel pressure, measurement range
2Fc3 Fuel pressure steuer ventil, plausibility
2Fc6 Energy save mode active
2Fc7 Power saving mode 2, active
2FdA Crank case ventilation, system check
2Fdb Crank case ventilation, electric ATIC39

3070 Cyl. same adjustment via irregular running Cyl. 1
3071 Cyl. same adjustment via irregular running Cyl. 2
3072 Cyl. same adjustment via irregular running Cyl. 3
3073 Cyl. same adjustment via irregular running Cyl. 4
3074 Cyl. same adjustment via irregular running Cyl. 5
3075 Cyl. same adjustment via irregular running Cyl. 6
307c Cyl. same adjustment via Lambda Cyl. 1
307d Cyl. same adjustment via Lambda Cyl. 2
307E Cyl. same adjustment via Lambda Cyl. 3
307F Cyl. same adjustment via Lambda Cyl. 4

3080 Cyl. same adjustment via Lambda Cyl. 5
3081 Cyl. same adjustment via Lambda Cyl. 6
30A0 Ignition coil Cyl. 1, input signal
30A1 Ignition coil Cyl. 2, input signal
30A2 Ignition coil Cyl. 3, input signal
30A3 Ignition coil Cyl. 4, input signal
30A4 Ignition coil Cyl. 5, input signal
30A5 Ignition coil Cyl. 6, input signal
30Ac Injection valve Cyl. 1, input signal
30Ad Injection valve Cyl. 2, input signal
30AE Injection valve Cyl. 3, input signal
30AF Injection valve Cyl. 4, input signal
30b0 Injection valve Cyl. 5, input signal
30b1 Injection valve Cyl. 6, input signal
30bA Injector bank 1 or ECU, internal error
30bb Injector bank 2 or ECU, internal error
30bE Injector, calibration: plausibility30C1 motor oil pressure control, statically
30c0 Motor oil pressure control, dynamically
30c1 Motor oil pressure control, statically
30c2 Oil pressure regulating valve, control
30c3 Motor oil pressure sensor, signal
30c4 Motor oil pressure control, mechanically
30c5 Engine oil pump, mechanical: engine oil pressure
30c6 Motor oil pressure sensor, plausibility
30c7 Motor oil pressure system
30c8 Motor oil pressure, final stage (preliminary)
30c9 Engine oil pump, control
30cF Waste gate, input signal
30d0 Waste gate 2, input signal
30d6 Nitric oxide sensor, plausibility
30d8 NOX sensor, Sensor damaged
30dA NOX sensor, Signal
30dc Nitric oxide senor, heating
30dE NOX sensor - PreCat 02 sensor, Correlation
30E0 NOX sensor, Offset
30E2 NOX sensor, thrust test
30E4 NOX sensor, aging
30E6 NOX, dynamics
30E9 NOX Cat, aging
30EA NOX Cat, sulfurated
30Ed Extreme knock Cyl. 1
30EE Extreme knock Cyl. 2
30EF Extreme knock Cyl. 3
30F0 Extreme knock Cyl. 4
30F1 Extreme knock Cyl. 5
30F2 Extreme knock Cyl. 6
30Fc Turbo charger, density
30FE Turbo charger, high pressure side
30FF Turbo charger, low pressure side
3100 Air charge control, shut-down
3104 Engine roughness, layer charging operation
3105 Engine roughness, layer charging operation: warming
3c1d Crank shaft sensor: signal
3c1E Camshaft sensor: input-signal

3c1F Camshaft sensor: output-signal
3d33 Torque request with CAN

cd87 PT-CAN communication failure
cd8b Local-CAN communication failure
cd8F PT-CAN communication error
cd94 Message (outside temperature/relative time, 310)
cd95 Message (handling FGR / ACC, 194)
cd96 Message (torque requirement ACC active cruise control, B7)
cd97 Message (speed demand AFS, B1)
cd98 Message (torque requirement DSC dynamic stability control, B6)
cd99 Message (torque requirement EGS electronic gear control? B5)
cd9A Message (torque requirement SMG, BD)
cd9b Message (vehicle mode, 315)
cd9c Message (speed, 1A0)
cd9d Message (gear data, BA)
cd9E Message (gear data 2, 1A2)
cd9F Message (kilometer reading/coverage, 330)
cdA0 Message (terminal state, 130)
cdA1 Message (steering wheel angle, C4)
cdA2 Message (power management battery voltage, 3B4)
cdA3 Message power management load voltage, 334)
cdA4 Message (status ARS active roll stabilizing module, 1AC) acceleration?
cdA5 Message (status DSC dynamic stability control, 19E)
cdA6 Message (status electrical fuel pump, 335)
cdA7 Message (status reverse gear, 3B0)
cdA8 Message (status KOMBI, 1B4)
cdA9 Message (heat stream/load AC, 1B5)
cdAA Message (status crash shut off EKP electric fuel pump, 135)
cdAb Message (lamp condition, 21A)
cdAC Message (status water valve, 3B5)
cdAd Message (requirement road wheel torque drive line, BF)
cdAE Message (time/date, 2F8)
cdAF Message (status trailer, 2E4)
cdb0 Message (display gear data)
cdb1 Message (status central locking system, 2FC)
cdb3 Message (speed demand steering, B9)
cdb4 Message (transmission data 3, 3B1) missing
cdb5 PT-CAN communication failure
cdb8 Message speed demand DKG, B8)
cdb9 Message (status EMF, 201)
cdbA Message (Stellanforderung EMF, 1A7)
cdbE Message, (torque demand from DSC)

Table 21

2711 DMTL pump final stage
2712 DMTL magnetic valve control
2713 Oxygen sensors switched
2714 Oxygen sensor heater after cat. (bank2)
2715 Oxygen sensor heater before cat. (bank2)
2716 Controller heater sensor after cat

2717 Controller heater sensor after cat (Bank2)
2718 Speed (rpm) sensor for missing tooth
2719 Speed (rpm) sensor for period timing
271A Oxygen sensor before cat.
271b Oxygen sensor before cat.
271c Oxygen sensor after cat.
271d Oxygen sensor heater before cat.
271E Oxygen sensor heater after cat.
271F Lambda sensor period duration ageing
2720 Lambda sensor ageing TV
2721 Lambda sensor ageing after cat
2722 Oxygen sensor2 before cat.
2723 Output heater O2-sensor before catalyst bank2
2724 Oxygen sensor2 after cat.
2725 Lambda sensor period duration ageing bank2
2726 Lambda sensor ageing TV bank2
2727 Lambda sensor ageing after cat bank2
2728 Adaptation multipl. area2
2729 Adaptation multipl. area2 (bank2)
272A Adaptation multipl. area1
272b Adaptation multipl. area1 (bank1)
272c Adaptation add. per time
272d Adaptation add. per time (Bank2)
272E Adaptation add. per ignition
272F Adaptation add. per ignition bank2
2730 Failure within the idle-speed control
2731 Camshaft control inlet - VANOS
2732 NW-Control of inlet B2 (8cyl)/outlet (4cyl)
2733 NW-KW synchron failure
2734 PS/MAF plausibility
2735 TPS/MAF plausibility bank2
2736 Throttle controller PWM short test
2737 EWS-manipulation control
2738 Catalytic-converter conversion
2739 Catalytic-converter conversion LSU
273A Catalytic-converter conversion LSU bank2
273b Throttle controller PWM long test
273c Throttle controller diff.
273d Catalytic-converter conversion (bank2)
273E Signal temperature sensor exhaust1
273F Signal temperature sensor exhaust2
2740 Pedal-travel1 permanently
2741 Pedal-travel2 permanently
2742 Misfire detection cyl.1
2743 Misfire detection cyl.3
2744 Misfire detection cyl.4
2745 Misfire detection cyl.2
2746 Misfire detection cyl.
2747 Misfire detection cyl.
2748 Misfire detection cyl
2749 Misfire detection cyl
274A Misfire detection cyl
274b Misfire detection cyl
274c Misfire detection cyl

274d Misfire detection cyl
274E Misfire detection, Checksum failure
274F Misfire, Checksum failure, service rel.
2752 Pedal-travel half plausibility
2753 Monitoring ignition coil 1
2754 Monitoring ignition coil 3
2755 Monitoring ignition coil 4
2756 Monitoring ignition coil 2
2757 Monitoring ignition coil
2758 Monitoring ignition coil
2759 Monitoring ignition coil
275A Monitoring ignition coil
275b Monitoring ignition coil
275c Monitoring ignition coil
275d Monitoring ignition coil
275E Monitoring ignition coil
275F Pedal-travel defect
2760 Secondary air system
2761 Secondary air system bank2
2762 Secondary air valve
2763 Secondary air valve bank2
2764 Controller secondary air pump relay
2765 Controller secondary air valve
2766 Phase generator 1 time duration
2767 Phase generator 2 time duration
2768 Phase generator positioning failure
2769 Spring test DK-controller open spring
276A Control-unit recognition
276b Secondary air valve output stage bank 2
276c Phase generator 2 positioning failure
276d Tank-ventilation functional check
276E Tank-ventilation functional check bank 2
276F Failure within secondary air system
2770 Failure within secondary air system
2771 Secondary air system locked
2772 Control gas ventilation valve
2773 Tank-ventilation valve output stage bank 2
2774 Monitoring cycle failure storing
2775 engine moment monitoring level 2
2776 Interface multifunction steering wheel
2777 Monitoring controller function
2778 Switch clutch
2779 SG self test RAM
277A Switch break
277b SG self test ROM
277c SG self test reset
277d Battery Voltage
277E Moment restrictor level 1
277F Crankshaft sensor
2780 Ref. marking generator
2781 Camshaft sensor inlet
2782 Camshaft sensor outlet
2783 Hot film air mass meter
2784 Thermostat diagnosis THM

2785 DK-Potentiometer
2786 Throttle-valve potentiometer 1
2787 Throttle-valve potentiometer 2
2788 Vehicle speed
2789 Bad way detection
278A Ambient temperature
278b Engine temperature
278c Intake air temperature
278d Temperature sensor: coolant temperature
278E Diff. pressure sensor suction tube
278F Low Range signal not plausible
2790 Transmission temperature
2791 Parts exchange without adaptation
2792 Drosselklappe - Positionsüberwachung
2793 DK-Actuator regulator area
2794 DK-Actuator controlled
2795 Spring test DK-controller closing spring
2796 Throttle flap lower stop
2797 DK-Controller failure booster
2798 Throttle flap emergency air point
2799 Abort DV-adaptation because of environment
279A Throttle flap adaptation - abort after re-teaching
279b Thermostat jammed
279c Control heater cooler
279d Control engine fan
279E Output exhaust flap
279F Output fan A
27A0 Controller: E-box fan
27A1 Failure within secondary air system 2
27A2 Temperature sensor engine LR
27A3 CAN timeout HDEV2 SG
27A4 EWS3.3 Schnittstelle EWS-DME
27A6 Ansteuerung Einspritzventil 1
27A7 Ansteuerung Einspritzventil 3
27A8 Ansteuerung Einspritzventil 4
27A9 Ansteuerung Einspritzventil 2
27AA Ansteuerung Einspritzventil
27Ab Ansteuerung Einspritzventil
27Ac Ansteuerung Einspritzventil
27Ad Ansteuerung Einspritzventil
27AE Ansteuerung Einspritzventil
27AF Ansteuerung Einspritzventil
27b0 Ansteuerung Einspritzventil
27b1 Ansteuerung Einspritzventil
27b3 Diagnose DK/HFM adjustment
27b4 Ambient-pressure sensor
27b5 Control inlet-VANOS
27b6 Control inlet-VANOS bank2
27b7 Control gas pump relay
27b8 Plausibility diff. pressure sensor
27b9 BLS/BTS Plausibility
27bA Output AC-compressor enable from AC-SG
27bb Camshaft control outlet-VANOS
27bc Camshaft control outlet-VANOS bank2

27bd Control outlet-VANOS
27bE Output outlet-VANOS bank2
27bF Camshaft sensor inlet bank2
27c0 Camshaft sensor outlet bank2
27c1 Master camshaft sensor
27c2 Controller: AC-compressor relay
27c3 Signal oil level sensor (TOENS)
27c6 LDP Diagnose 0.5mm leak
27c7 LDP Diagnose 1.0mm leak
27c8 LDP system
27c9 Leak diagnosis module
27cA Ansteuerung DM-TL Pumpen motor
27cb DM-TL 0.5mm leak MIL off
27cc DM-TL 1mm & 0.5mm leak
27cd DM-TL module
27cE Load sensor monitoring
27cF Ignition time Cyl.1
27d0 Ignition time Cyl.3
27d1 Ignition time Cyl.4
27d2 Ignition time Cyl.2
27d5 Failure within the idle-speed control
27d6 Output idle-speed controller OFF
27d7 Output idle-speed controller ON
27d8 Failure depressurize pump
27d9 Output DM-TL heater
27dA Generator failure
27dc EWS3.3 Random-code storing
27E1 Monitoring pedal-travel sensor
27E2 Knock sensor 1
27E3 knock sensor2 bank1
27E4 Knock sensor 3
27E5 Knock sensor 4
27E6 Knock sensor zero test
27E7 Knock sensor offset
27E8 Knock regulation Test impulse
27E9 Knock sensor zero test bank 2
27EA CAN-Timeout HDEV
27Eb CAN-Timeout TCU
27Ec CAN-Timeout EGS
27Ed CAN-Timeout ASC/DSC
27EE CAN-Timeout Instrumental combination
27EF CAN ACC-Signal failure
27F0 Plausibility MSR-control
27F1 Plausibility ACC-control
27F2 Plausibility gas level
27F3 CAN-Timeout VVT-Control unit
27F4 CAN-Timeout VVT-Control-unit bank2
27F5 CAN-Timeout DME-Control unit
27F6 Pedal-travel
27F7 Pedal-travel Poti1
27F8 Pedal-travel Poti2
27F9 Start automatic control
27FA Input starter automatic
27Fb Output controlled airflow

27Fd Starter automatic
27FE Knock control offset bank2
27FF Knock control test signal bank2
280A Assign. camshaft to crankshaft
280d Control unit monitoring
280E Control unit monitoring
280F Camshaft control
2810 Engine speed monitoring
2811 Local CAN Bus Off
2812 Oil temperature
2813 Control unit monitoring group A
2814 Control unit monitoring group B
2815 Control unit monitoring group C
2816 Engine rpm monitor
2818 Voltage-monitoring O2-sensor on air
281c BSD wire failure
281E Controller DISA
281F DISA-mount response
2820 Failure DISA
2821 DISA temperature warning level engine protection module
2822 Forced switched EGS
2823 Heating lambda sensor before Cat
2824 Heating lambda sensor before Cat bank2
2825 Lambda sensor aging after Cat
2826 Lambda sensor aging after Cat bank2
2827 Heater link at signal-path
2828 CAN ARS-Signal failure
2829 CAN CAS-Signal failure
282A CAN IHKA- Signal failure
282b CAN PWML- Signal failure
282c CAN SZL- Signal failure
282d Heater link at signal-path bank2
282E PWG-movement
2830 Aging of O2-sensor behind catalyst (Bank2)
2832 Plausibility ASR-Torque
2833 Plausibility CAS
2834 Plausibility IHKA
2835 Plausibility PWML
2836 Plausibility SZL
2837 Plausibility EMF
2838 Output-stage AAV
2839 AAV-Functionality
283A Failure oil quality sensor
283b Camshaft control output bank2
283c Camshaft control output
283d PT - CAN bus off
283E VVT enable control
283F Plausibilitaet Oeldruckschalter
2841 Air flushed injector valves control
2843 Plausibility diagnostics LSU by LSH after catalyst
2844 Internal diagnostics CJ125 SPI communication
2849 Power break at pump-current
284A Short circuit to minus or to plus at sensor-line
284c LSU dynamic too slow

284F Failure at speed-display kombi
2850 VVT-guiding sensor
2851 VVT-guiding sensor (bank 2)
2852 VVT-ref. sensor
2853 VVT-ref. sensor (bank 2)
2854 VVT-Sensor plausibility
2855 VVT-Sensor plausibility (bank 2)
2856 VVT-Supply voltage for the sensor
2857 VVT-Supply voltage for the sensor (bank 2)
2858 VVT-Teaching function at stop
2859 VVT-Teaching function at stop (bank 2)
285A VVT-Actuator monitoring
285b VVT-Actuator monitoring (Bank 2)
285c VVT-CAN-communication
285d VVT-CAN-communication (bank 2)
285E VVT-Control unit internal failure
285F VVT-Control unit internal failure (bank 2)
2860 VVT-Controller
2861 VVT-Controller (bank2)
2862 VVT-Power supply
2863 VVT-Power supply (bank2)
2864 DM-TL-Pump control failure
2865 Power supply limit VVT-emergency
2866 VVT-stops leaning necessary
2867 VVT system overload
2868 VVT system overload (bank2)
286F AGR Valve output
2870 AGR Valve monitoring
2871 AGR Valve positioning sensor
2872 Diagnose AGR valve
2873 Output-stage HDEV-SG1 bank1
2874 Output-stage HDEV-SG1 bank2
2875 Output-stage HDEV-SG1 bank3
2876 Output-stage HDEV-SG2 bank1
2877 Output-stage HDEV-SG2 bank2
2878 Output-stage HDEV-SG2 bank3
2879 Signal exhaust temperature sensor 4
287A Output pressure control valve
287b Signal exhaust temperature sensor 3
287c Pressure sensor suction tube
287d Signal rail-pressure sensor
287E Pressure control valve
287F High pressure sensor test
2880 AGR system
2881 CDKBKE Output twist generator controller
2882 Output pressure control valve
2883 Rail-pressure regulation
2889 Plausibility monitoring of the RAM backup
2893 DME- Temperature
2898 Lambda sensor after cat bank1: signal
28A0 Output gas circuit switch
28c8 Lambda control mismatch
28c9 Lambda control mismatch bank2
28d2 Pressure sensor charge-air

28d3 Plausibility ambient- to charge pressure
28d4 Pressure control valve
28d5 Output charge pressure control valve
28d6 HO-Proc. failure, coding missing
28d7 Generator communication
28d8 RAM backup-failure
28d9 Electric heater
28dA CAN timeout elec. heater
28db Minimum Lift adaptation repeat. ran over
28dc Generator 2 communication
2906 AGR valve monitoring
2907 AGR valve monitoring
2908 CAN timeout DSG SG
2909 CAN timeout EGS
290A Active front steering torque
292b LSU adjustment line
292c LSU adjustment line bank2
292d LSU Nernst cell break
292E LSU Nernst cell break bank2
2930 LSU virtual mass break
2931 LSU virtual mass break bank2
2936 Fuel pressure sensor
2937 Function monitoring: Lambda Plausibility
296b Inverted lambda sensors of front cat
2972 Control pump for breaks
297d CAN SSG signal failure
2981 Control controlled airflow
299b IBS communication
299c IBS general error
299d IBS plausibility
29A8 Power management network failure
29A9 Power management
29AE Tank-ventilation-system major leak
29cc Misfire detection summation error
29cd Misfire detection cylinder 1 in 1. ignition sequence
29cE Misfire detection cylinder 2 in 4. ignition sequence
29cF Misfire detection cylinder 3 in 2. ignition sequence
29d0 Misfire detection cylinder 4 in 3. ignition sequence
29d9 Misfire at too low fuel filling level
29dd Bad way detection
29E5 LR-Adaptation multiplicative area2 (Bank 1)
29E6 LR-Adaptation multiplicative area2 (Bank 2)
29E7 LR-Adaptation add. per time (Bank 1)
29E8 LR-Adaptation add. per time (bank 2)
29E9 LR-Adaptation add. per ignition
29EA LR-Adaptation add. per ignition bank 2
29Eb LR-Deviation
29Ec LR-Deviation bank 2
29Ed LR-Adaptation multiplicative area1 (Bank 1)
29EE LR-Adaptation multiplicative area1 (Bank 2)
29F4 Catalytic-converter conversion
29F5 Catalytic-converter conversion (bank 2)
29F8 Cat-conversion LSU
29F9 Catalytic-converter conversion LSU bank 2

29FE Secondary air injection system
29FF Secondary air system (Bank 2)

2A01 Secondary air injection control valve
2A02 Control air system valve
2A03 Secondary air pump relay
2A05 Secondary air valve bank 2
2A0E AGR valve
2A12 Magnetic valve DMTL control
2A13 Control DMTL pump motor
2A14 DM-TL Fine leak
2A15 Tank-ventilation-system major leak
2A16 DM-TL 0.5mm leak MIL off
2A17 DM-TL module
2A18 Control DMTL heater
2A19 Tank ventilation valve
2A1A Tank-ventilation functional check
2A1d Tank leakage monitoring
2A1E Leakage diagnostic pump
2A58 VVT-Enable control
2A59 VVT-leading sensor
2A5A VVT-leading sensor bank 2
2A5b VVT-ref. sensor
2A5c VVT-ref. sensor (bank 2)
2A5d VVT-Sensor plausibility
2A5E VVT-Sensor plausibility (bank 2)
2A5F VVT-Supply voltage for the sensor
2A60 VVT-Supply voltage for the sensor (bank 2)
2A61 VVT-Teaching function at stop
2A62 VVT-Teaching function at stop (bank 2)
2A63 VVT-Actuator monitoring
2A64 VVT-Actuator monitoring (Bank 2)
2A65 VVT-Control unit internal failure
2A66 VVT-Control unit internal failure (bank 2)
2A67 VVT-activation
2A68 VVT-Output-stage (bank
2A69 VVT-Power supply
2A6A VVT-Power supply (bank 2)
2A6b Power supply limit VVT-emergency
2A6c VVT-stops leaning necessary
2A6d VVT-system overload
2A6E VVT-system overload bank2
2A6F Multiple minimum lift adaptation stop
2A70 Error current plausibility
2A71 Output stage diagnostics of discharge relay VVT
2A72 Actuator control VVT throw adjustment
2A80 Injector-VANOS
2A81 Control inlet-VANOS bank2
2A83 Camshaft control- Input
2A85 Outlet-VANOS
2A86 Control outlet-VANOS bank2
2A88 Camshaft control outlet
2A89 Camshaft control outlet-VANOS bank2

2b5c Crankshaft sensor
2b5d Reference marking generator
2b61 Assign. camshaft to crankshaft
2b62 Camshaft sensor inlet
2b63 Camshaft sensor outlet
2b64 Camshaft sensor inlet bank2
2b65 Camshaft sensor outlet bank2
2b66 Master camshaft sensor
2b70 DISA
2b71 Failure DISA
2b72 DISA temperature warning level engine protection model
2b7F Diagnose DK/HFM adjustment
2b80 Idle running controlling
2b8A Knock sensor zero test
2b8b Knock sensor offset
2b8c Knock regulation Test impulse
2b8d Knock sensor zero test bank2
2b8E Knock control offset bank2
2b8F Knock control test signal bank2
2b98 Plausibility monitoring of the RAM backup
2b99 RAM Backup
2b9A ECU self-test RAM
2b9b ECU self-test ROM
2b9c ECU self-test Reset
2b9d Over voltage detection on VCC
2b9E Energy saving mode active
2bA7 Torque restrictor level 1
2bb6 Control main relay

2c24 Interchanged O2-sensors
2c37 Heater link at signal-path
2c38 Heater link at signal-path bank2
2c39 LSU dynamic too slow
2c3A LSU dynamic too slow bank2
2c3b Voltage-monitoring O2-sensor on air
2c3c Voltage-monitoring O2-sensor on air bank2
2c45 Lambda sensor in front of cat
2c46 Lambda sensor of front cat bank2
2c47 Short circuit to minus or to plus at sensor-line
2c48 Short circuit to minus or to plus at sensor-line bank2
2c49 Plausibility diagnostics LSU by LSH after catalyst
2c4A Plausibility diagnostics LSU by LSH after catalyst bank2
2c4b Internal diagnostics CJ125 SPI communication
2c4c Internal diagnostics CJ125 SPI communication bank2
2c4d Power break at pump-current
2c4E Power break at pump-current bank2
2c4F LSU adjustment line
2c50 LSU adjustment line bank2
2c51 LSU Nernst cell break
2c52 LSU Nernst cell break bank2
2c53 LSU virtual mass break
2c54 LSU virtual mass break bank2
2c55 Lambda sensor periode duration ageing
2c56 Lambda sensor ageing TV

2c6A Inverted lambda sensors of front cat
2c6d Lambda sensor aging of rear cat bank1
2c6E Lambda sensor aging of rear cat bank2
2c6F Lambda sensor aging of rear cat (VL- test)
2c70 Aging of O2-sensor behind catalyst (Bank 2)
2c71 Lambda sensor in rear of cat
2c72 Lambda sensor of rear cat bank2
2c9c Output heater O2-sensor before catalyst
2c9d Output heater O2-sensor before catalyst bank2
2c9E Control heater sensor after cat
2c9F Control heater sensor after cat (bank2)
2cA0 Lambda sensor heating in front of cat
2cA1 Oxygen sensor heater before cat. (bank2)
2cA2 Heating lambda sensor of front cat (shearing stress)
2cA3 Heating lambda sensor of front cat (shearing stress) Bank2
2cA8 Oxygen sensor heater after cat.
2cA9 Oxygen sensor heater after cat. (bank2)
2cEF DK-actuator
2cF0 DK-Actuator regulator area
2cF1 DK position monitoring
2cF8 DK-potentiometer sensor
2cF9 Throttle-valve potentiometer 1
2cFA Throttle-valve potentiometer 2
2cFF DK-Controller failure booster

2d00 Spring-check throttle-valve-actuator closing spring
2d01 Spring-check throttle-valve-actuator opening spring
2d02 Error emergency air set point
2d03 Abort DV-adaptation because of environment
2d04 Throttle valve adaptation
2d05 Abort at UMA-repeat learning
2d08 Parts exchange without adaptation
2d0F Hot film air mass meter
2d10 Plausibility HFM
2d11 Plausibility, mass flow Lambda sensor
2d12 Plausibility, mass flow Lambda sensor BAnk2
2d19 PWG-movement
2d1A Accelerator potentiometer
2d1b Pedal-travel Poti1
2d1c Pedal-travel Poti2
2d28 Diff. pressure sensor suction tube
2d29 Plausibility diff. pressure sensor
2d32 Plausibility pressure sensor intake tube
2d6E Moment monitoring level 2
2d6F Load sensor monitoring
2d70 Control unit monitoring group A
2d71 Control unit monitoring group B
2d72 Control unit monitoring group C
2d73 Fuel pressure sensor
2d74 Function monitoring: Lambda Plausibility
2d75 Engine speed monitoring
2d76 Pedal encoder monitoring (level2)
2d78 Control air mass flow adjustment
2db4 Interface MFL

2dbF CAN ACC signal failure
2dc8 CAN- Timeout EGS
2dcA CAN timeout EGS
2dcb CAN SSG signal failure
2dcF CAN- Timeout instrument combination
2dd6 CAN- Timeout ASC/DSC
2dd7 CAN timeout DSG SG
2dd8 Active front steering torque
2dd9 CAN ARS signal failure
2ddA CAN CAS signal failure
2ddb CAN IHKA signal failure
2ddc CAN SZL signal failure
2ddd CAN-Timeout VVT-Control unit
2ddE VVT-CAN-communication
2ddF VVT-CAN-communication (bank2)
2dE6 CAN-Timeout DME-Control unit
2dEb Power management network failure
2dEc Power management
2dEd Power management: quiescent current violation
2E24 Spark coil cylinder 1 in 1. ignition sequence
2E25 Spark coil cylinder 2 in 4. ignition sequence
2E26 Spark coil cylinder 3 in 2. ignition sequence
2E27 Spark coil cylinder 4 in 3. Ignition sequence
2E30 Injection valve cylinder 1 in 1. Cylinder sequence
2E31 Injection valve cylinder 2 in 4. Cylinder sequence
2E32 Injection valve cylinder 3 in 2. Cylinder sequence
2E33 Injection valve cylinder 4 in 3. Cylinder sequence
2E68 Knock sensor 1
2E69 Knock sensor2 (Bank1)
2E6A Knock sensor 3
2E6b Knock sensor 4
2E7c BSD wire failure
2E86 Electrical water pump
2E8b IBS communication
2E8c IBS general error
2E8d IBS plausibility
2E95 Generator communication
2E97 CDKDGEN/CDKGEN - BSD generator
2E9F Failure oil quality sensor
2EA0 Oil status sensor
2Eb8 BSD-message from IBS not existent
2Ebc BSD message from oil sensor missing
2Ebd BSD message from generator missing
2EbE BSD message from generator missing
2EE0 Temperature sensor engine cooling liquid
2EEA Temp. sensor coolant temperature
2EF4 Thermostat characteristic diagram cooling, mechanical
2EF5 Thermostat characteristic diagram cooling, activation
2EF6 Characteristic diagram thermostat
2EFE Engine blower

2F08 Intake air temperature
2F0d Control controlled airflow
2F12 Air conditioner compressor control

2F17 Forced switched EGS
2F1c Oil temperature sensor
2F21 Engine controller, power reduction
2F44 EWS3.3 manipulation protection
2F45 EWS3.3 Interface DME-EWS
2F46 WS3.3 Random-code storing
2F4E Vehicle speed
2F50 Failure at speed-display kombi
2F58 Control starter automatic
2F59 Input starter automatic
2F5A Start automatic control
2F62 Switch brakes
2F67 Switch clutch
2F6c Control exhaust flap
2F71 E-Box blower
2F76 Ambient-pressure sensor
2F7b Oil pressure switch
2F80 Error CAN / relative timer
2F85 DME- Temperature
2F8A Battery Voltage
2F94 Fuel pump relay
2F99 Ambient temperature
2F9E Terminal oil level sensor
2FA3 HO-process failure, coding missing
2Fb2 Suction jet pump for brake force amplifier
2Fb7 Electrical: under pressure pump for brake booster

cd87 PT - CAN bus off
cd8b Local CAN Bus Off
cd9b Status vehicle-mode
cdA1 Angle of steering wheel
cdA2 Power management battery voltage
cdA3 Power management charge voltage
cdA7 Status gear reverse
cdAA Control crash-switch-off EKP
cdAc Status water valve

Table 22

2712 Magnetic valve DMTL control
2713 Interchanged O2-sensors
2714 Oxygen sensor heater after cat. (bank 2)
2715 Oxygen sensor heater before cat. (bank 2)
2716 Control heater sensor after cat
2717 Control heater sensor after cat (bank 2)
271A Lambda sensor before catalyst bank 1
271b Output heater O2-sensor before catalyst
271c Oxygen sensor after cat.
271d Oxygen sensor heater before cat.
271E Oxygen sensor heater after cat.
271F Lambda sensor period duration ageing
2720 Lambda sensor ageing TV

2721 Lambda sensor ageing after cat
2722 Oxygen sensor2 before cat.
2723 Output heater O2-sensor before catalyst bank 2
2724 Oxygen sensor2 after cat.
2725 Lambda sensor period duration ageing bank 2
2726 Lambda sensor ageing TV bank2
2727 Lambda sensor ageing after cat bank2
2728 LR-Adaptation multiplicative area2
2729 LR-Adaptation multiplicative area2 (bank2)
272A LR-Adaptation multiplicative area1
272b LR-Adaptation multiplicative area1 (bank1)
272c LR-Adaptation additive per time
272d LR-Adaptation additive per time (bank2)
272E LR-Adaptation additive per ignition
272F LR-Adaptation additive per ignition bank2
2731 Camshaft control inlet
2732 NW-intake control bank2
2737 EWS3.3 manipulation protection
2738 Catalytic-converter conversion
2739 Cat-conversion LSU
273A Catalytic-converter conversion LSU bank2
273d Catalytic-converter conversion (bank2)
273E Exhaust temperature sensor in front of catalyst
273F Exhaust temperature sensor in front of catalyst (Bank2)
2742 Misfire detection cyl. 1
2743 Misfire detection cyl. 5
2744 Misfire detection cyl. 4
2745 Misfire detection cyl. 8
2746 Misfire detection cyl. 6
2747 Misfire detection cyl. 3
2748 Misfire detection cyl. 7
2749 Misfire detection cyl. 2
274E Misfire detection, Checksum failure
2753 Monitoring igniter 1
2754 Monitoring igniter 5
2755 Monitoring igniter 4
2756 Monitoring igniter 8
2757 Monitoring igniter 6
2758 Monitoring igniter 3
2759 Monitoring igniter 7
275A Monitoring igniter 2
2760 Secondary air injection system
2761 Secondary air system bank2
2762 Secondary air injection control valve
2763 Secondary air valve bank2
2764 Control stage relays secondary air pump
2765 Control air system valve
2769 Spring-check throttle-valve-actuator opening spring
276b Control secondary air valve bank2
276d Tank-ventilation functional check
276E Tank-ventilation functional check bank2
2772 Control tank-ventilation valve
2773 Control tank-ventilation valve bank2
2774 Engine Off Time

2775 Engine moment monitoring level 2
2776 Interface MFL
2777 Monitoring controller function
2778 Switch clutch
2779 ECU self-test RAM
277A Switch brakes
277b ECU self-test ROM
277c ECU self-test Reset
277d Battery Voltage
277E Torque restrictor level 1
277F Crankshaft sensor
2780 Ref. marking generator
2781 Camshaft sensor inlet
2782 Camshaft sensor outlet
2783 Hot film air mass meter
2785 DK-potentiometer sensor
2786 Throttle-valve potentiometer 1
2787 Throttle-valve potentiometer 2
2788 Vehicle speed
2789 Bad way detection
278A Ambient temperature
278b Engine temperature
278c Intake air temperature
278d Temp. sensor coolant temperature
278E Diff. pressure sensor suction tube
278F Low Range signal not plausible
2790 Transmission temp.
2791 Arts exchange without adaptation
2792 DK position monitoring
2793 DK-Actuator regulator area
2794 DK-Actuator controlled
2795 Spring-check throttle-valve-actuator closing spring
2796 Check at lower stop
2797 DK-Controller failure booster
2798 Error emergency air set point
2799 Abort DV-adaptation because of environment
279A Abort at UMA-repeat learning
279b Thermostat jamming
279c Control thermostat map cooling
279d Control engine fan
279E Control exhaust flap
279F Control fan A
27A0 Control E-box fan
27A4 EWS3.3 Interface DME-EWS
27A6 Activation EV1
27A7 Activation EV5
27A8 Activation EV4
27A9 Activation EV8
27AA Activation EV6
27Ab Activation EV3
27Ac Activation EV7
27Ad Activation EV2
27b3 Diagnose DK/HFM adjustment
27b4 Ambient-pressure sensor

27b5 Control inlet-VANOS
27b6 Control inlet-VANOS bank2
27b7 Control fuel pump relay
27b8 Plausibility diff. pressure sensor
27bb Camshaft control outlet-VANOS0
27bc Camshaft control outlet-VANOS bank2
27bd Control outlet-VANOS
27bE Control outlet-VANOS bank2
27bF Camshaft sensor inlet bank2
27c0 Camshaft sensor outlet bank2
27c1 Master camshaft sensor
27c2 Control A/C-compressor control
27c3 Failure oil status sensor
27c8 Tank-ventilation-system major leak
27cA Control DMTL pump motor
27cb DM-TL 0.5mm leak MIL off
27cc DM-TL Fine leak
27cd DM-TL module
27cE Load sensor monitoring
27d5 Failure within the idle-speed control
27d9 Control DMTL heater
27dA Generator failure
27dc EWS3.3 Random-code storing
27E1 Monitoring pedal-travel sensor
27E2 Knock sensor 1
27E3 Knock sensor 2
27E4 Knock sensor 3
27E5 Knock sensor 4
27E6 Knock sensor zero test
27E7 Knock sensor offset
27E8 Knock regulation Test impulse
27E9 Knock sensor zero test bank2
27EA CAN-Timeout HDEV
27Eb CAN-Timeout TXU
27Ec CAN EGS signal failure
27Ed CAN ASC/DSC signal failure
27EE CAN Instrument cluster signal failure
27EF CAN ACC signal failure
27F0 Plausibility MSR-control
27F1 Plausibility ACC-control
27F2 Plausibility gas level
27F3 CAN-Timeout VVT-Control unit
27F5 CAN-Timeout DME-Control unit
27F6 Accelerator potentiometer
27F7 Pedal-travel Poti1
27F8 Pedal-travel Poti2
27F9 Control starter automatic
27FA Input starter automatic
27Fb Controlled airflow
27Fd Start automatic control
27FE Knock control offset bank2
27FF Knock control test signal bank2

280A Assign. camshaft to crankshaft

2812 Oil temperature
2813 Control unit monitoring group A
2814 Control unit monitoring group B
2815 Control unit monitoring group C
2816 Engine speed monitoring
2818 Voltage-monitoring O2-sensor on air
281d BSD wire failure
281E Control DISA
281F Voltage-monitoring O2-sensor on air bank2
2820 Failure DISA
2821 DISA temp. warn level engine protection model
2822 Forced switched EGS
2823 Lambda sensor heater before cat (within acceleration)
2824 Lambda sensor heater before cat (within acceleration) bank2
2825 Aging of O2-sensor behind catalyst
2826 Aging of O2-sensor behind catalyst (Bank 2)
2827 Heater link at signal-path
2828 CAN ARS signal failure
2829 CAN CAS signal failure
282A CAN IHKA signal failure
282b CAN PWML signal failure
282c CAN SZL signal failure
282d Heater link at signal-path bank2
282E PWG-movement
2830 Aging of O2-sensor behind catalyst (Bank 2)
2832 Plausibility diagnostics LSU by LSH after catalyst bank2
2833 Internal diagnostics CJ125 SPI communication bank2
2834 Power break at pump-current bank2
2835 Short circuit to minus or to plus at sensor-line bank2
2836 LSU dynamic too slow bank2
283A Failure oil quality sensor
283E VVT-enable-wire control
283F Plausibility oil pressure switch
2841 Containment injectors control
2842 Generator 2 error
2843 Plausibility diagnostics LSU by LSH after catalyst
2844 Internal diagnostics CJ125 SPI communication
2849 Power break at pump-current
284A Short circuit to minus or to plus at sensor-line
284c LSU dynamic too slow
284F Failure at speed-display kombi
2850 VVT-leading sensor
2851 VVT-leading sensor bank2
2852 VVT-ref. sensor
2853 VVT-ref. sensor (bank2)
2854 VVT-Sensor plausibility
2855 VVT-Sensor plausibility (bank2)
2856 VVT-Supply voltage for the sensor
2857 VVT-Supply voltage for the sensor (bank2)
2858 VVT-Teaching function at stop
2859 VVT-Teaching function at stop (bank2)
285A VVT-Actuator monitoring
285b VVT-Actuator monitoring (Bank2)
285c VVT-CAN-communication

285d VVT-CAN-communication (bank2)
285E VVT-Control unit internal failure
285F VVT-Control unit internal failure (bank2)
2860 VVT-Output
2861 VVT-Output-stage (bank2
2862 VVT-Power supply
2863 VVT-Power supply (bank2)
2864 DM-TL-Pump control failure
2865 Power supply limit VVT-emergency
2866 VVT-stops leaning necessary
2867 VVT-system overload
2868 VVT-system overload bank2
287c Pressure sensor suction tube
2880 AGR system
2889 Plausibility monitoring of the RAM backup
28c8 LR-Deviation
28c9 LR-Deviation bank2
28d2 Pressure sensor charge-air
28d3 Charge pressure sensor
28d4 Charge pressure actuator
28d5 Control charge pressure control valve
28d6 HO-process failure, coding missing
28d7 Generator communication
28d8 Network-system switched off, error-memory deleted
28db Multiple. minimum lift adaptation stop
28dc Generator 2 communication

2908 CAN Timeout DSC SG
2909 CAN timeout EGS
290A Active front steering torque
292b LSU adjustment line
292c LSU adjustment line bank2
292d LSU Nernst cell break
292E LSU Nernst cell break bank2
2930 LSU virtual mass break
2931 LSU virtual mass break bank2
297d CAN SSG signal failure
2981 Control controlled airflow
2982 Oil control light activation
299b Communication DME - IBS
299c IBS proprietary diagnostic 1
299d IBS proprietary diagnostic 2
29A8 Power management network failure
29A9 Power management
29AE Check Filler Cap
29cc Misfire, several cylinders
29cd Misfire, cylinder 1
29cE Misfire, cylinder 2
29cF Misfire, cylinder 3
29d0 Misfire, cylinder 4
29d1 Misfire, cylinder 5
29d2 Misfire, cylinder 6
29d3 Misfire, cylinder 7
29d4 Misfire, cylinder 8

29d9 Misfire with low fuel
29dd Bad way detection
29E5 Mixture adaptation, upper speed range
29E6 Mixture adaptation 2, upper speed range
29E7 Mixture adaptation at idle speed per time
29E8 Mixture adaptation 2 at idle speed per time
29E9 Mixture adaptation at idle speed per ignition
29EA Mixture adaptation 2 at idle speed per ignition
29Eb Mixture adaptation, deflection
29Ec Mixture adaptation 2, deflection
29Ed Mixture adaptation, lower speed range
29EE Mixture adaptation 2, lower speed range
29EF Mixture adaptation, total fault
29F0 Mixture adaptation 2, total fault
29F4 Catalyst conversion
29F5 Catalyst conversion 2
29FE Secondary air system

2A01 Secondary air valve, Mechanics
2A02 Secondary air valve, Control
2A03 Secondary air pump relay, Control
2A05 Secondary air ventricle 2, Mechanics
2A08 Secondary air system 2
2A09 Secondary air pump plausibility
2A12 DMTL-magnetic valve, control
2A13 DMTL-Lack diagnose pump control
2A14 DMTL, subtlest leakage
2A15 DMTL, fine leakage
2A16 DMTL, subtlest leakage
2A17 DMTL, system error
2A18 DMTL, Heizung: control
2A19 Fuel evaporation valve, control
2A1A Fuel evaporation system, function
2A1b Fuel cap
2A1c Fuel level, plausibility
2A1d Fuel level, plausibility
2A1E Fuel level, signal
2A20 Tank ventilation valve, plausibility
2A23 DMTL, leakage diagnostic pump
2A58 Valvetronic, power supply
2A59 Valvetronic, eccentric shaft sensor: guide
2A5A Valvetronic, eccentric shaft sensor 2: guide
2A5b Valvetronic, eccentric shaft sensor: reference
2A5c Valvetronic, eccentric shaft sensor 2: reference
2A5d Valvetronic, eccentric shaft sensor: plausibility
2A5E Valvetronic, eccentric shaft sensor 2: plausibility
2A5F Valvetronic, eccentric shaft sensor: power supply
2A60 Valvetronic, eccentric shaft sensor 2: power supply
2A61 Valvetronic, adjustable range
2A62 Valvetronic, adjustable range 2
2A63 Valvetronic, servo motor: monitoring tightness, rotation direction
2A64 Valvetronic, servo motor 2: monitoring tightness, rotation direction
2A65 Valvetronic, internal error
2A66 Valvetronic, internal error 2

2A67 Valvetronic, servo motor: control
2A68 Valvetronic, servo motor 2: control
2A69 Valvetronic, servo motor: power supply
2A6A Valvetronic, servo motor 2: power supply
2A6b Valvetronic, power limitation
2A6c Valvetronic, position at restart: plausibility
2A6d Valvetronic, electric overload protection
2A6E Valvetronic, electrical overload protection 2
2A6F Valvetronic, minimal stroke
2A80 Intake-VANOS, control
2A81 Intake-VANOS, Control 2
2A83 Intake-VANOS
2A84 Intake-VANOS 2
2A85 Outlet-VANOS, control
2A86 Outlet-VANOS, Control 2
2A88 Outlet-VANOS
2A89 Outlet-VANOS 2
2A8A Intake-VANOS, Adaptation limit stop
2A8b Intake-VANOS, Adaptation limit stop 2
2A8c Outlet-VANOS, Adaptation limit stop
2A8d Outlet-VANOS, Adaptation limit stop 2
2A8E Intake camshaft, cog offset of crankshaft
2A8F Intake camshaft 2, cog offset of crankshaft
2A90 Outlet camshaft, cog offset of crankshaft
2A91 Outlet camshaft 2, cog offset of crankshaft

2b5c Crankshaft sensor, signal
2b5d Crankshaft sensor, plausibility
2b61 Crankshaft - camshaft, correlation
2b62 Camshaft sensor, intake
2b63 Camshaft sensor, outlet
2b64 Camshaft sensor 2, intake
2b65 Camshaft sensor 2, outlet
2b66 Camshaft sensor, master
2b70 Variable intake system, control
2b71 Variable suction system
2b72 Variable intake system, temperature warning limit
2b73 Variable intake system, plausibility
2b7F Trim throttle valve-air mass sensor
2b80 Idle running control
2b84 Intake flap, Signal
2b98 Ecu, internal error: RAM backup, plausibility
2b99 Ecu, internal error: RAM backup
2b9A Ecu, internal error: RAM
2b9b Ecu, internal error: ROM
2b9c Ecu, internal error: reset
2b9d Ecu, internal error: over voltage
2bA7 Monitoring engine torque limit
2bbF Oil control lamp Control
2bc0 Environment temperature sensor, Plausibility
2bc1 Ambient temperature sensor, signal

2c24 Lambda probe front catalyst, exchanged
2c31 Lambda probe front catalyst, adjustment control

2c32 Lambda probe front catalyst 2, adjustment control
2c37 Lambda probe front catalyst, heater interconnection
2c38 Lambda probe front catalyst 2, heater interconnection
2c39 Lambda probe front catalyst, dynamic
2c3A Lambda probe front catalyst 2, dynamic
2c3b Lambda probe front catalyst, not plugged
2c3c Lambda probe front catalyst 2, not plugged
2c45 Lambda probe front catalyst
2c46 Lambda probe front catalyst 2
2c47 Lambda probe front catalyst, sensor line
2c48 Lambda probe front catalyst 2, sensor line
2c49 Lambda probe front catalyst, plausibility
2c4A Lambda probe front catalyst 2, plausibility
2c4b Ecu, internal error: lambda probe device
2c4c Ecu, internal error: lambda probe device 2
2c4d Lambda probe front catalyst, pumping electricity line
2c4E Lambda probe front catalyst 2, pumping electricity line
2c4F Lambda probe front catalyst, alignment line
2c50 Lambda probe front catalyst 2, alignment line
2c51 Lambda probe front catalyst, Nernst line
2c52 Lambda probe front catalyst 2, Nernst line
2c53 Lambda probe front catalyst, virtual mass
2c54 Lambda probe front catalyst 2, virtual mass
2c61 Lambda probe front catalyst, electrical error
2c62 Lambda probe front catalyst 2, electrical error
2c6d Lambda probe rear catalyst, aging
2c6E Lambda probe rear catalyst 2, aging
2c71 Lambda probe rear catalyst
2c72 Lambda probe rear catalyst 2
2c9c Lambda probe heater front catalyst, control
2c9d Lambda probe heater front catalyst 2, control
2c9E Lambda probe heater rear catalyst, control
2c9F Lambda probe heater rear catalyst 2, control
2cA0 Lambda probe heater front catalyst
2cA1 Lambda probe heater front catalyst 2
2cA2 Lambda probe heating in front of catalyst, shearing stress
2cA3 Lambda probe heating in front of catalyst 2, shearing stress
2cA8 Lambda probe heater rear catalyst, function
2cA9 Lambda probe heater rear catalyst 2, function
2cEF Throttle valve actuator, control
2cF0 Throttle valve actuator, control range
2cF1 Throttle valve actuator, position monitoring
2cF8 Throttle valve potentiometer
2cF9 Throttle valve potentiometer 1
2cFA Throttle valve potentiometer 2
2cFF Throttle valve actuator, amplifier alignment

2d00 Throttle valve actuator, spring check closing spring
2d01 Throttle valve actuator, spring check opening spring
2d02 Throttle valve actuator, auxiliary air point
2d03 Throttle valve actuator, abort alignment because of environmental condition
2d04 Throttle valve actuator, checking lower block
2d05 Throttle valve actuator, abort at UMA relearn
2d08 Throttle valve actuator, change detection without alignment

2d0F Airflow sensor, signal
2d10 Air mass gauger, plausibility
2d11 Air mass current, plausibility
2d13 Luftmassenmesser, rational
2d14 Air mass gauger, correction signal
2d19 Gas pedal device, gas pedal sensor
2d1A Gas pedal device, gas pedal sensor
2d1b Gas pedal device, gas pedal sensor 1
2d1c Gas pedal device, gas pedal sensor 2
2d28 Differential air pressure, intake tube: signal
2d29 Differential air pressure, intake tube: plausibility
2d32 Differential pressure, intake tube: plausibility
2d6E DME, internal error: monitoring actual torque
2d6F Monitoring airflow
2d70 DME, internal error: monitoring engine functions
2d71 DME, internal error: monitoring input variable
2d72 DME, internal error: monitoring hardware
2d75 DME, internal error: monitoring engine speed
2d76 DME, internal error: monitoring gas pedal device
2d78 Air mass current alignment
2db4 Multifunction steering wheel, communication
2dbF CAN, ACC: signal error
2dcA EGS message missing, timeout
2dcb CAN, SSG: signal error
2dcF CAN, control panel: signal error
2dd7 DSC message missing, timeout
2dd8 AFS message missing, timeout
2dd9 CAN, ARS: signal error
2ddA CAN, CAS: signal error
2ddb CAN, IHKA: signal error
2ddc Message from SZL is absent
2ddd Valvetronic message missing
2ddE Local-CAN communication
2ddF Local-CAN communication 2
2dEb Power management, vehicle electrical system monitoring
2dEc Power management, battery monitoring
2dEd Power management, quiescent current control

2E24 Spark coil cylinder 1
2E25 Spark coil cylinder 2
2E26 Spark coil cylinder 3
2E27 Spark coil cylinder 4
2E28 Spark coil cylinder 5
2E29 Spark coil cylinder 6
2E2A Spark coil cylinder 7
2E2b Spark coil cylinder 8
2E30 Injection valve cylinder 1, control
2E31 Injection valve cylinder 2, control
2E32 Injection valve cylinder 3, control
2E33 Injection valve cylinder 4, control
2E34 Injection valve cylinder 5, control
2E35 Injection valve cylinder 6, control
2E36 Injection valve cylinder 7, control
2E37 Injection valve cylinder 8, control

2E68 Knocking sensor signal 1
2E69 Knocking sensor signal 2
2E6A Knocking sensor signal 3
2E6b Knocking sensor signal 4
2E72 Ecu, internal error: knock sensor device
2E73 Ecu, internal error: knock sensor device
2E7c Bit serial data interface, signal
2E86 Electrical water pump
2E8b Intelligent Battery sensor, Signal
2E8c Intelligent Battery sensor, Function
2E8d Intelligent Battery sensor, Signal transmission
2E95 Generator
2E97 Generator
2E99 Generator 2
2E9A Generator 2, communication
2E9F Oil status sensor
2EA0 Ölzustands sensor
2Eb8 BSD message from intelligent battery sensor missing
2Eb9 BSD message from glow ecu missing
2EbA BSD message from electric coolant pump missing, electronic missing
2Ebb BSD message from electric coolant pump missing, motor missing
2Ebc BSD message from oil sensor missing
2Ebd BSD message from generator missing
2EbE BSD message from generator 2 missing
2EbF Rate action: BSD message missing
2EE0 Coolant temperature sensor, signal
2EE1 Coolant temperature sensor, plausibility
2EE4 Coolant temperature sensor, plausibility, shunt
2EEA Temperature sensor coolant exhaust, Signal
2EEc Temperature sensor radiator, plausibility
2EF4 Engine characteristic map thermostat, Mechanics
2EF5 Engine characteristic map thermostat, Control
2EF6 Engine operating map thermostat
2EFE E-fan, control

2F08 Intake air temperature sensor, signal
2F09 Intake air temperature sensor, plausibility
2F0d Cooler louver, control, (GLF)
2F0F Cooler jalousie, above
2F12 Air-conditioning compressor, control
2F17 Engine oil temperature, temporary to high, EGS-Zwangsschaltung
2F26 Coordinator thermal management
2F44 EWS manipulation prevention
2F45 Interface EWS-DME
2F46 EWS saving changing code
2F4E Vehicle speed, signal
2F4F Vehicle speed, plausibility
2F50 Vehicle speed, plausibility
2F59 Start automatic, start signal
2F5A Start automatic control
2F62 Brake light switch
2F67 Clutch switch, Signal
2F6c Flue gas damper, control
2F71 E-Box-fan, control

2F76 Ambient pressure, signal
2F77 Ambient pressure, plausibility
2F78 DME, internal error: environment pressure sensor
2F7b Oil pressure switch, plausibility
2F80 Engine turn off time, plausibility
2F8A Battery Voltage
2F94 Fuel pump relay, actuation
2F99 Environment temperature sensor, Plausibility
2F9E Thermo oil level sensor
2FA3 Coding is absence

cd87 PT-CAN communication error
cd8b Local CAN communication error
cd9b Telegram monitoring (vehicle mode, 315)
cdA1 Telegram monitoring (steering angle, C4)
cdA2 Telegram monitoring (power management battery voltage, 3B4)
cdA3 Telegram monitoring (power management charging voltage, 334)
cdA7 Message (Status reverse gear, 3B0)
cdAA Message (Status Crash shut off EKP, 135)
cdAc message (status of water valve, 3B5)
cdEb Message (lamp status, 21A)
cdEd Message (request wheel torque drivetrain, BF)
cdEE Message (time/date, 2F8)
cdEF Message (status of trailer, 2E4)

Table 23

2710 ECU internal INJ-error memory test
2711 Ambient pressure sensor
2712 Air mass meter bank 1
2713 Air mass meter bank 2
2714 Intake pipe pressure sensor bank 1
2715 Intake pipe pressure sensor bank 2
2716 Camshaft sensor inlet bank 1
2717 Camshaft sensor outlet bank 1
2718 Camshaft sensor inlet bank 2
2719 Camshaft sensor outlet bank 2
271A VANOS control inlet bank 1
271b VANOS control outlet bank 1
271c VANOS control inlet bank 2
271d VANOS control outlet bank 2
271E Camshaft synchronization bank 1
271F Camshaft synchronization bank 2
2720 SG internal error INJ process control
2721 Message (Moment request DKG)
2722 Fuel pressure sensor electrical Diagnostics
2723 Message (Status reverse gear)
2724 Lambda sensor electric diagnostic VKAT bank 1
2725 Lambda sensor electric diagnostic VKAT bank 2
2726 Lambda sensor plausibility VKAT bank 1
2727 Lambda sensor plausibility VKAT bank 2
2728 Lambda sensor thrust diagnostic VKAT bank 1
2729 Lambda sensor thrust diagnostic VKAT bank 2

272A Lambda sensor electric diagnostic NKAT bank 1
272b Lambda sensor electric diagnostic NKAT bank 2
272c Lambda sensor driver diagnostic heating NKAT bank 1
272d Lambda sensor driver diagnostic heating NKAT bank 2
2737 Fill plausibility bank 1
2738 Fill plausibility bank 2
2739 Secondary air Mini-HFM electrical Diagnostics
273A Lambda sensor vibration test NKAT bank 1
273b Lambda sensor vibration test NKAT bank 2
273c Lambda sensor part/full diagnostic VKAT bank 1
273d Lambda sensor part/full diagnostic VKAT bank 2
273E Lambda sensor terminal stage heating VKAT bank 1
273F Lambda sensor terminal stage heating VKAT bank 2
2740 Lambda sensor heating control diagnostic VKAT bank 1
2741 Lambda sensor heating control diagnostic VKAT bank 2
2742 Lambda sensor heater resistance diagnostic VKAT bank 1
2743 Lambda sensor heater resistance diagnostic VKAT bank 2
2744 Lambda sensor heater diagnostic after START VKAT bank 1
2745 Lambda sensor heater diagnostic after START VKAT bank 2
2746 Lambda probe Reference resistance diagnosis VKAT Bank 1
2747 Lambda probe Reference resistance diagnosis VKAT Bank 2
2748 Lambda probe Diagnosis via ATIC42-device VKAT Bank1
2749 Lambda probe Diagnosis via ATIC42-device VKAT Bank2
274A Lambda sensor pump current assimilation error VKAT bank 1
274b Lambda sensor pump current assimilation error VKAT bank 2
274c Message (gear data)
274d Message (gear data 2)
274E Lambda sensor error Nernst cable VKAT bank 1
274F Lambda sensor error Nernst cable VKAT bank 2
2750 Lambda sensor error pump current cable VKAT bank 1
2751 Lambda sensor error pump current cable VKAT bank 2
2752 SG internal error Inj working page
2753 Ignition cyl 1 actuation electric diagnostic
2754 Ignition cyl 2 actuation electric diagnostic
2755 Ignition cyl 3 actuation electric diagnostic
2756 Ignition cyl 4 actuation electric diagnostic
2757 Ignition cyl 5 actuation electric diagnostic
2758 Ignition cyl 6 actuation electric diagnostic
2759 Ignition cyl 7 actuation electric diagnostic
275A Ignition cyl 8 actuation electric diagnostic
275b Ignition cyl 9 actuation electric diagnostic
275c Ignition cyl 10 actuation electric diagnostic
275d Lambda control stop error bank 1
275E Lambda control stop error bank 2
275F VANOS maximum stop inlet bank 1
2760 VANOS maximum stop outlet bank 1
2761 VANOS maximum stop inlet bank 2
2762 VANOS maximum stop outlet bank 2
2763 VANOS valve inlet bank 1
2764 VANOS valve outlet bank 1
2765 VANOS valve inlet bank 2
2766 VANOS valve outlet bank 2
2767 Injection valve cyl 1 electric diagnostic
2768 Injection valve cyl 2 electric diagnostic

2769 Injection valve cyl 3 electric diagnostic
276A Injection valve cyl 4 electric diagnostic
276b Injection valve cyl 5 electric diagnostic
276c Injection valve cyl 6 electric diagnostic
276d Injection valve cyl 7 electric diagnostic
276E Injection valve cyl 8 electric diagnostic
276F Injection valve cyl 9 electric diagnostic
2770 Injection valve cyl 10 electric diagnostic
2771 Lambda sensor dynamic diagnostic VKAT bank 1
2772 Lambda sensor dynamic diagnostic VKAT bank 2
2776 DMTL pump
2777 DMTL valve
2778 DMTL heating
2779 DMTL leak detection
277A DMTL pump moisture cut-out
277b Tank cover message
277c Lambda sensor trim control diagnostic bank 1
277d Lambda sensor trim control diagnostic bank 2
277E Main relay actuation electric diagnostic
277F EKP module actuation electric diagnostic
2780 Intake jet pump actuation electric diagnostic
2781 TD signal actuation electric diagnostic
2782 Secondary air pump actuation electric diagnostic
2783 Secondary air valve actuation electric diagnostic
2786 Plausible fuel pressure sensor to mech. pressure actuator
2787 Fuel pressure variance comparison at controlled operation
2788 Fuel pressure variance comparison at max pressure
2789 Catalytic converter conversion bank 1
278A Catalytic converter conversion bank 2
278b VANOS pressure accumulation valve actuation
278c Generator
278d BSD interface
278E Oil quality sensor
278F IBS communication
2790 IBS implausible
2791 IBS general
2792 Power management vehicle electrical system
2793 Power management battery
2794 Unterdruck sensor Mastervac
2796 Motor emergency program activated
2797 Intake jet pump system check
2798 EWS interface
2799 EWS
279A IBS communication error
279b Generator communication error
279c BSD bus error (general)
279d Power management battery closed-circuit current violation
279E Oil quality sensor
279F Box blower actuation electric diagnostic

27A0 SG internal error
27A1 Throttle valve actuator enable cable bank 1
27A2 Throttle valve actuator enable cable bank 2
27A3 Oil pressure switch electric diagnostic

27A4 Tank ventilation function test bank 1
27A5 Tank ventilation function test bank 2
27A6 Tank ventilation actuation bank 1
27A7 Tank ventilation actuation bank 2
27A8 SG internal monitor level 2
27A9 Crankshaft sensor
27AA Lambda adaptation at VKAT stop bank 1
27Ab Lambda adaptation at VKAT stop bank 2
27Ac Crank housing ventilation diagnostic bank 1
27Ad Crank housing ventilation diagnostic bank 2
27AE Tank fuel level implausible
27AF Secondary air pump

27b0 Secondary air system throughput bank 1
27b1 Secondary air system throughput bank 2
27b2 Secondary air system throughput main section
27b3 Energy saving mode active
27b4 Gear leergassen switch of manual transmission
27b5 Clutch switch manual gearbox
27b6 VANOS oil pressure
27b7 Elektrische Unterdruck pump for Mastervac
27b8 E blower actuation electric diagnostic
27bA Fuel system diagnostic bank 1
27bb Fuel system diagnostic bank 2
27bc Catalyst protection Bank 1
27bd Catalyst protection Bank 2
27bE Message (Status Gear)
27bF Message (Request wheel moment)

27c0 Tankgeber elektrischer Fehler
27c1 Info Tank leer bei Fehlereintrag
27c2 Message (wheel tolerance adjustment)
27c3 DMTL leak detection
27c4 Environment pressure Plausibility
27c5 Secondary air Mini-HFM Plausibility
27c6 Lambda probe AD-Diagnostics trim control Bank 1
27c7 Lambda sensor trim control AD diagnostic bank 2
27c8 Lambda probe electric. OPENLOAD-Diagnostics NKAT Bank1
27c9 Lambda probe electric. OPENLOAD-Diagnostics NKAT Bank2
27cA Lambda probe Wiedereinsetz-Diagnose NKAT Bank 1
27cb Lambda probe Wiedereinsetz-Diagnose NKAT Bank 2
27cc Lambda probe heating energy NKAT Bank 1
27cd Lambda probe heating energy NKAT Bank 2
27cE Fuel pressure/-Model comparison
27cF Building up of fuel pressure EKP-forward stroke

27d0 Fuel pressure control adaptation
27d1 Gear temperature sensor of manual transmission
27d2 Lambda probe VKAT/ATIC42 SPI-communication
27d3 INDEX_195_INJ
27d4 Message (OBD-Error type)
27d5 Tank sensor left electrical failure
27d6 Tank sensor right electrical failure
27d7 Lambda sensor SLOPE diagnostics NKAT Bank 1

27d8 Lambda sensor SLOPE diagnostics NKAT Bank 2
27d9 Plausibility Difference-pressure-sensor Mastervac
27dA Plausibility depression pump Mastervac
27db INDEX_203_INJ
27dc INDEX_204_INJ
27dd INDEX_205_INJ
27dE INDEX_206_INJ
27dF INDEX_207_INJ

27E0 INDEX_208_INJ
27E1 INDEX_209_INJ
27E2 INDEX_210_INJ
27E3 INDEX_211_INJ
27E4 INDEX_212_INJ
27E5 INDEX_213_INJ
27E6 INDEX_214_INJ
27E7 INDEX_215_INJ
27E8 INDEX_216_INJ
27E9 INDEX_217_INJ
27EA INDEX_218_INJ
27Eb INDEX_219_INJ
27Ec INDEX_220_INJ
27Ed INDEX_221_INJ
27EE INDEX_222_INJ
27EF INDEX_223_INJ

2AF8 ECU internal IGN-error memory test
2AF9 Coolant temperature sensor
2AFA Coolant temperature sensor plausibility
2AFb Intake air temperature sensor bank 1
2AFc Intake air temperature sensor bank 2
2AFd Relative time plausibility
2AFE Voltage at terminal 87
2AFF Radiator output temperature sensor

2b00 Control module temperature sensor
2b01 Voltage supply at PIN 111,219,514
2b02 Voltage supply at PIN 124,512
2b03 SG internal error Ign working page
2b04 Radiator outlet temperature plausibility
2b05 Pedal value sensor 1
2b06 Pedal value sensor 2
2b07 Pedal value sensor plausibility
2b08 SG internal error IGN processor control
2b0d Idling speed control valve monitor bank 1
2b0E Idling speed control valve monitor bank 2
2b0F SMG switch process monitor
2b10 SMG module monitor
2b11 SMG engine speed monitor
2b12 Ambient temperature sensor plausibility
2b13 Speed registration
2b14 Initialization throttle positioner
2b15 Throttle valve actuator control monitor bank 1
2b16 Throttle valve actuator control monitor bank 2

2b17 Throttle valve adaptation bank 1
2b18 Throttle valve adaptation bank 2
2b19 Ion current signal amplification bank 1
2b1A Ion current measurement voltage selection bank 1
2b1b Ion current signal amplification bank 2
2b1c Ion current measurement voltage selection bank 2
2b1d Exhaust temperature sensor bank 1
2b1E Exhaust temperature sensor bank 2
2b1F Throttle valve sensor bank 1
2b20 Throttle valve sensor bank 2
2b21 Throttle valve actuator pre-drive check bank 1
2b22 Throttle valve actuator pre-drive check bank 2
2b23 Idling speed control valve control monitor bank 1
2b24 Idling speed control valve control monitor bank 2
2b25 Throttle valve monitor bank 1
2b26 Throttle valve monitor bank 2
2b27 Throttle valve test reset springs bank 1
2b28 Throttle valve test reset springs bank 2
2b29 Torque manager monitor
2b2A Idling speed control valve initialization
2b2b DSC requirement plausibility
2b2c Throttle valve initialization bank 1
2b2d Throttle valve initialization bank 2
2b2E Idling speed control valve initialization bank 1
2b2F Idling speed control valve initialization bank 2
2b35 Combustion misfire with cut-out cyl 1
2b36 Combustion misfire with cut-out cyl 2
2b37 Combustion misfire with cut-out cyl 3
2b38 Combustion misfire with cut-out cyl 4
2b39 Combustion misfire with cut-out cyl 5
2b3A Combustion misfire with cut-out cyl 6
2b3b Combustion misfire with cut-out cyl 7
2b3c Combustion misfire with cut-out cyl 8
2b3d Combustion misfire with cut-out cyl 9
2b3E Combustion misfire with cut-out cyl 10
2b3F Ion current signal bank 1
2b40 Ion current signal bank 2
2b41 Combustion misfire with cut-out several cyl
2b42 Combustion misfire with emissions deterioration cyl 1
2b43 Combustion misfire with emissions deterioration cyl 2
2b44 Combustion misfire with emissions deterioration cyl 3
2b45 Combustion misfire with emissions deterioration cyl 4
2b46 Combustion misfire with emissions deterioration cyl 5
2b47 Combustion misfire with emissions deterioration cyl 6
2b48 Combustion misfire with emissions deterioration cyl 7
2b49 Combustion misfire with emissions deterioration cyl 8
2b4A Combustion misfire with emissions deterioration cyl 9
2b4b Combustion misfire with emissions deterioration cyl 10
2b4c Ion current control module internal bank 1
2b4d Ion current control module internal bank 2
2b4E Combustion misfire with emissions deterioration several cyl
2b4F Intake air temperature sensor plausibility bank 1
2b50 Request Plausibility
2b51 Message (Status EKP)

2b52 Additional oil pump bank 1
2b53 Additional oil pump bank 2
2b54 SG internal error
2b55 SG internal monitor level 2
2b56 Brake light/test switch plausibility
2b57 Motor emergency program activated
2b58 Idling control monitor
2b59 Coolant thermostat monitor
2b5A Intake air temperature sensor plausibility bank 2
2b5b Throttle valve error status Bank 1
2b5c Throttle valve error status Bank 2
2b5d Vehicle speed control release
2b5E Acknowledgement of accelerator and brake at the same time
2b5F CAS Control electrical Diagnostics
2b60 Longitudinal acceleration sensor Hand schaltgetriebe
2b61 Gear input speed sensor / slipping clutch
2b62 Environment temperature sensor
2b63 Idle running switch control - CSS
2b64 Shunt coolant temperature sensor
2b65 Post adoption longitudinal acceleration sensor HSG
2b66 INDEX_110_IGN
2b67 INDEX_111_IGN
2b68 INDEX_112_IGN
2b69 INDEX_113_IGN
2b6A INDEX_114_IGN
2b6b INDEX_115_IGN
2b6c INDEX_116_IGN
2b6d INDEX_117_IGN
2b6E INDEX_118_IGN
2b6F INDEX_119_IGN
2b70 INDEX_120_IGN
2b71 INDEX_121_IGN
2b72 INDEX_122_IGN
2b73 INDEX_123_IGN
2b74 INDEX_124_IGN
2b75 INDEX_125_IGN
2b76 INDEX_126_IGN
2b77 INDEX_127_IGN

cd87 CAN bus communication error
cd8b Bus off idling speed control valve /SMG CAN
cd93 Bus off throttle valve CAN
cd94 Message (exterior temperature)
cd95 Message (control FGR)
cd98 Message (current requirement DSC)
cd9b Message (vehicle mode)
cd9c Message (vehicle speed)
cd9F Message (mileage)
cdA0 Message (terminal status)
cdA1 Message (steering angle)
cdA5 Message (status DSC)
cdA8 Message (cluster status)
cdA9 Message (air-conditioning requirement)
cdAA Message (crash cut-out)

cdAF Message (trailer status)
cdbb Message (wheel speeds)
cdbc Message (audio telephone control)
cdbd Idling speed control valve CAN message bank 1
cdbe Idling speed control valve CAN message bank 2
cdbf Throttle valve actuator CAN message bank 1
cdc0 Throttle valve actuator CAN message bank 2
cdc1 SMG CAN message 1
cdc2 SMG CAN message 2
cdc3 SMG CAN message 3
FFFF Unknown error location

Table 24

2712 Actuation of solenoid valve DM-TL
2713 Reversed Lambda probes or plug assignment HDEV control module reversed
2716 Actuation of heating sensor downstream of cat
271A Lambda probe upstream of cat
271b Output heating probe upstream of catalytic converter
271c Lambda probe downstream of cat
271d Lambda probes heating upstream of cat
271E Lambda probes heating downstream of cat
2721 Lambda probe ageing downstream of cat
2728 LR adaptation multiplicative range2
272A LR adaptation multiplicative range1
272c LR adaptation additive per time
272E LR adaptation additive per ignition
2730 Mix adaptation sum error
2731 Camshaft controller inlet
2733 Mix adaptation sum error Bank2
2736 Lambda probe in front of catalyst, electrical error
2737 EWS3.3 manipulation guard
2738 Catalytic conversion
2742 Failure recognition cyl.1
2743 Failure recognition cyl.7
2744 Failure recognition cyl.5
2745 Failure recognition cyl.11
2746 Failure recognition cyl.3
2747 Failure recognition cyl.9
2748 Failure recognition cyl.6
2749 Failure recognition cyl.12
274A Failure recognition cyl.2
274b Failure recognition cyl.8
274c Failure recognition cyl.4
274d Failure recognition cyl.10
274E Failure recognition sum error
2753 Monitor magneto 1
2754 Control igniter 5
2755 Control igniter 3
2756 Control igniter 6
2757 Control igniter 2
2758 Control igniter 4

2759 Control igniter 7
275A Control igniter 11
275b Control igniter 9
275c Control igniter 12
275d Control igniter 8
275E Monitor magneto 10
2760 Secondary air system
2762 Secondary air valve
2764 Activate relay for secondary air pump
2765 Activate secondary air valve
2769 Spring test throttle valve adjuster opening spring
276A Control module selection
276d Tank ventilation functional check
2772 Activate tank ventilation valve
2774 Plausibility system clock power module
2775 Engine torque monitor level 2
2776 Multi-functional steering wheel interface
2778 Clutch switch
2779 Control module self-test RAM
277A Brake switch
277b Control module self-test ROM
277c Control module self-test RESET
277d Battery voltage
277E Torque limitation level 1
277F Crankshaft sensor
2780 Reference mark sensor
2781 Camshaft sensor inlet
2782 Camshaft sensor outlet
2783 Hot film air mass meter
2785 Throttle valve potentiometer
2786 Throttle valve potentiometer 1
2787 Throttle valve potentiometer 2
2788 Driving speed
2789 Poor road recognition
278A Ambient temperature
278b Engine temperature
278c Intake air temperature
278d Temperature sensor radiator outlet
278E Differential pressure sensor intake pipe
2791 Exchanger code without adaptation
2792 Throttle valve position monitor
2793 DK-Actuator Control division
2794 Throttle valve adjuster activation
2795 Spring test throttle valve adjuster closing spring
2796 Check bottom stop
2797 Throttle valve adjuster error during amplifier matching
2798 Check emergency air point
2799 Cancel DV adaptation because of environmental conditions
279A Cancel during UMA relearn
279b Thermostat jamming
279c Activation of thermostat characteristic field cooling
279d Activation engine electric fan
279E Activation of exhaust valve
279F Output fan A

27A0 Activation of E box fan
27A2 Engine fan 2 activated
27A4 EWS3.3 EWS-DME interface

27b0 Environment temperature sensor, Signal
27b1 Environment temperature sensor, Plausibility
27b3 Throttle valve/HFM matching activation
27b4 Pressure sensor environment
27b5 Activation of inlet VANOS
27b7 Activation of fuel pump relay
27b8 Plausibility differential pressure sensor
27b9 Environment pressure sensor, Signal
27bA Environment pressure sensor, Plausibility
27bb Camshaft control outlet
27bd Activation of outlet VANOS

27c1 Master camshaft sensor
27c2 Activation of air conditioning compressor controller
27c8 DM-TL rough leakage
27cA Activation of DM-TL pump motor
27cb DM-TL Very fine leak (0.5 mm) MIL off
27cc DM-TL fine leak
27cd DM-TL module
27cE Load-sensor-, wire- or ECU-error

27d5 Idling control defective
27d9 Activation of DM-TL heating
27dA Generator error
27dc EWS3.3 alternating code saving

27E1 Pedal value sensor monitor
27E2 Knocking sensor1
27E3 Knocking sensor2
27E4 Knocking sensor3
27E5 Knocking sensor3
27E6 Knocking control zero test
27E7 Knocking control offset
27E8 Knocking control test pulse
27E9 Knocking control zero test bank2
27EA CAN timeout HDEV
27Ec CAN-EGS Signal error
27Ed CAN-ASC/DSC signal error
27EE CAN-instrument cluster signal error
27EF CAN-ACC signal error

27F2 Plausibility tank fill level
27F3 CAN-Timeout VVT control module
27F4 Fuel level, signal
27F5 Fuel level, plausibility
27F6 Pedal value sensor
27F7 Pedal value sensor potentiometer1
27F8 Pedal value sensor potentiometer2
27FA Automatic start input

27Fd Automatic start
27FE Knocking control offset bank2
27FF Knocking control test pulse bank2

2813 Control module monitor group A
2814 Control module monitor group B
2815 Control module monitor group C
2816 Engine speed monitor
2818 Voltage monitor probe on air (probe not fitted but connected)
2819 Time out ECU-coupling
281E Activation of DISA
2822 Forced circuit EGS
2823 Lambda probe heating upstream of cat (in thrust)
2825 Lambda probe ageing downstream of cat
2827 Heating connection to signal path
2828 CAN-ARS signal error
2829 CAN-CAS signal error
282A CAN-HKA signal error
282b CAN-PWML signal error
282c CAN-SZL signal error
282E PWG movement
283A Error oil level sensor
283d PT CAN bus off
283E VVT enable cable activation
283F Plausibility oil pressure switch
2841 Air-encased injection valves activation
2842 2nd generator error
2843 Plausibility diagnostic LSU by LSH rear cat
2844 Self-diagnostic CJ125 SPI communication
2846 Activation of intake valve
2847 Pressure switch activation
2848 Output relay HDEV SG
2849 Cable break on pump current
284A Short circuit probe cables against earth or Ub
284b Control return blocking valve
284c LSU dynamic too slow
284F Speed display in cluster defective
2850 VVT guide sensor
2851 VVT-direction sensor (Bank2)
2852 VVT reference sensor
2853 VVT reference sensor (bank2)
2854 VVT sensor plausibility
2855 VVT sensor plausibility (bank2)
2856 VVT sensor supply voltage
2857 VVT sensor supply voltage (bank2)
2858 VVT learn function stop
2859 VVT learn function stop (bank2)
285A VVT actuator monitor
285b VVT actuator monitor (bank2)
285c VVT-CAN communication
285d VVT-CAN communication (bank2)
285E VVT control module internal error
2860 VVT-output
2862 VVT-power supply

2864 DM-TL pump activation error
2865 Performance limit VVT emergency operation
2866 VVT stop learning necessary
2867 VVT system overload
286d Output HDEV9, cable 9
286E Output HDEV12, cable 12
286F Output HDEV8, cable 8
2870 Output HDEV10, cable 10
2871 High pressure injection valve high side 7
2872 High pressure injection valve high side 11
2873 High pressure injection valve high side 9
2874 High pressure injection valve high side 12
2875 High pressure injection valve high side 8
2876 High pressure injection valve high side 10
2877 High pressure injection valve high side 7
2878 High pressure injection valve high side 11
287A High pressure injection valve high side 9
287d High pressure injection valve low side 12
287E High pressure injection valve low side 8
287F High pressure injection valve low side 10
2880 Activation return ventilation-valve
2889 Plausibility monitor RAM backup
28c8 LR deviation
28d6 HO process error, no coding
28d7 Generator communication
28d8 RAM backup error
28db Min stroke adaptation stop several times
28dc 2. generator communication
28dE Booster timeout high pressure injection valve cyl 1
28dF Booster timeout high pressure injection valve cyl 5
28E0 Booster timeout high pressure injection valve cyl 3
28E1 Booster timeout high pressure injection valve cyl 6
28E2 Booster timeout high pressure injection valve cyl 2
28E3 Booster timeout high pressure injection valve cyl 4
28E4 Booster timeout high pressure injection valve cyl 7
28E5 Booster timeout high pressure injector cyl 11
2901 Booster timeout high pressure injection valve cyl 9
2902 booster timeout high pressure injector cyl 12
2903 Booster timeout high pressure injection valve cyl 8
2904 Booster timeout high pressure injector cyl 10
290F High pressure sensor test (signal rail pressure sensor)
2913 Output HDEV1, cable 1
2914 Output HDEV5 wire 5
2915 Output HDEV3, cable 3
2916 Output HDEV6, cable 6
2917 Output HDEV2, cable 2
2918 Output HDEV4, cable 4
2919 Output HDEV7, cable 7
291A Output HDEV11 cable 11
291b High pressure injection valve high side 1
291c High pressure injection valve high side 5
291d High pressure injection valve high side 3
291E High pressure injection valve high side 6
291F High pressure injection valve, communication

2920 High pressure injection valve low side 1
2921 High pressure injection valve low side 5
2922 High pressure injection valve low side 3
2923 High pressure injection valve low side 6
2924 Rail pressure control
292b LSU matching cable
292d LSU Nernst cell break
2930 LSU virtual earth break
2932 Output pressure control valve
2937 Function monitor: Lambda plausibilisation
2940 High pressure injection valve high side 2
2941 High pressure injection valve high side 4
2942 High pressure injection valve low side 2
2943 High pressure injection valve low side 4
2944 DME coupling messages
296c CAN timeout TXU
296d Engine torque bank comparison
2971 Program and data state plausibilisation of master and slave
297c RL limiting
298E High pressure injection valve 1
298F High pressure injection valve 5
2990 High pressure injection valve 3
2991 High pressure injection valve 6
2992 High pressure injection valve 2
2993 High pressure injection valve 4
2994 High pressure injection valve 7
2995 High pressure injection valve 11
2996 High pressure injection valve 9
2997 High pressure injection valve 12
2998 High pressure injection valve 8
2999 High pressure injection valve 10
29AE Fuel tank cap open

cd87 PT CAN bus off
cd8b Local CAN bus off
cdc7 PT CAN bus off
cdcb Local CAN bus off

Table 25

29cc Misfiring, several cylinders
29cd Misfiring, cylinder 1
29cE Misfiring, cylinder 2
29cF Misfiring, cylinder 3

29d0 Misfiring, cylinder 4
29d1 Misfiring, cylinder 5
29d2 Misfiring, cylinder 6
29d3 Misfire, cylinder 7
29d4 Misfire, cylinder 8
29d5 Misfire, cylinder 9
29d6 Misfire, cylinder 10
29d7 Misfire, cylinder 11

29d8 Misfire, cylinder 12
29dd Bad way detection

29E2 Fuel injection rail, pressure sensor signal
29E3 Fuel pressure regulation, plausibility
29E4 Volume control valve, control
29E5 Fuel mixture adaptation, upper speed range
29E7 Mixture adaptation at idle speed per time
29Ed Mixture adaptation, lower speed range
29EF Mixture adaptation, total fault

29F0 Mixture adaptation 2, total fault
29F4 Catalytic converter conversion

2A12 DMTL diagnosis module tank leakage, magnetic valve, input signal
2A13 DMTL diagnosis module tank leakage, leakage diagnosis pump, input signal
2A14 DMTL diagnosis module tank leakage, finest leakage
2A15 DMTL diagnosis module tank leakage, fine leakage
2A16 DMTL diagnosis module tank leakage, finest leakage
2A17 DMTL diagnosis module tank leakage, system failure
2A18 DMTL diagnosis module tank leakage, heating: input signal
2A19 Tank ventilation valve, input signal
2A1A Tank ventilation system, function
2A1d Tank filling level, plausibility
2A1E Fuel level, signal
2A21 Tank fill level 2, signal
2A2A Ventilation valve return system, control
2A58 Valvetronic, power supply
2A59 Valvetronic, eccentric shaft sensor: track
2A5b Valvetronic, eccentric shaft sensor: reference
2A5d Valvetronic, eccentric shaft sensor: plausibility
2A5F Valvetronic, eccentric shaft sensor: power supply
2A61 Valvetronic, adjustment range
2A63 Valvetronic, servo motor: monitoring tightness, rotation direction
2A65 Valvetronic, internal error
2A67 Valvetronic, adjustment motor: input signal
2A69 Valvetronic, servo motor: power supply
2A6b Valvetronic, power limiting
2A6c Valvetronic, position at restart: plausibility
2A6d Valvetronic, electronic overload protection
2A6F Valvetronic, minimal stroke
2A80 Inlet-Vanos variable cam control test, input signal
2A83 Injector-VANOS
2A85 Outlet-VANOS variable cam control test
2A88 Outlet-VANOS
2A8A Intake-VANOS, Adaptation limit stop
2A8c Outlet-VANOS, Adaptation limit stop
2A8E Intake camshaft, cog offset of crankshaft
2A90 Outlet camshaft, cog offset of crankshaft

2b5c Crankshaft sensor, signal
2b5d Crankshaft sensor, plausibility
2b62 Camshaft sensor, intake
2b63 Camshaft sensor, outlet

2b66 Camshaft sensor, master
2b7A Stop valve return system, control
2b7F Adjustment throttle valve-air mass sensor
2b81 Idle speed control at homogeny mode
2b82 Idle running control at catalyst heating system
2b84 Additional air flap, control
2b98 Ecu, internal error: RAM backup, plausibility
2b99 Ecu, internal error: RAM backup
2b9A Control unit, internal failure: RAM
2b9b Ecu, internal error: ROM
2b9c Ecu, internal error: reset
2bA7 DME, internal error: toque limit control level 1
2bAc DME, DME2: Program stand discrepancy
2bAd DME, DME2: Hardware, plausibility
2bc0 Ambient temperature sensor, plausibility
2bc1 Ambienttemperature sensor, signal

2c24 Lambda problem in front of catalytic converter, muddled
2c31 Lambda probe in front of catalytic converter, trimming control
2c37 Lambda probe in front of catalytic converter, heating coupling
2c39 Lambda probe in front of catalytic converter, dynamics
2c3b Lambda probe in front of catalytic converter, not plugged
2c47 Lambda probe front catalyst, sensor line
2c49 Lambda probe front catalyst, plausibility
2c4b Ecu, internal error: lambda probe device
2c4d Lambda probe front catalyst, pumping electricity line
2c4F Lambda probe front catalyst, alignment line
2c51 Lambda probe front catalyst, Nernst line
2c53 Lambda probe front catalyst, virtual mass
2c61 Lambda probe front catalyst, electrical error
2c6d Lambda probe behind catalytic converter, aging
2c71 Lambda probe rear catalyst
2c84 Lambda probe behind catalyst, Dynamics
2c9c Lambda probe heating in front of catalytic converter, input signal
2c9E Lambda probe heating behind catalytic converter, input signal
2cA0 Lambda probe heater front catalyst
2cA8 Lambda probe heating behind catalytic converter, function
2cEF Throttle valve actuator, activation
2cF0 Throttle valve actuator, control range
2cF1 Throttle valve actuator, position monitoring
2cF8 Throttle valve potentiometer
2cF9 Throttle valve potentiometer 1
2cFA Throttle valve potentiometer 2
2cFF Throttle valve actuator, amplifier alignment

2d00 Throttle valve actuator, spring check closing spring
2d01 Throttle valve actuator, spring check opening spring
2d02 Throttle valve actuator, auxiliary air point
2d03 Throttle valve actuator, abort alignment because of environmental condition
2d04 Throttle valve actuator, checking lower block
2d05 Throttle valve actuator, abort at UMA relearn
2d0F Air mass meter, signal
2d13 Air mass sensor, rationality
2d1A Gas pedal device, gas pedal sensor

2d1b Accelerator pedal module, pedal sensor signal 1
2d1c Accelerator pedal module, pedal sensor signal 2
2d28 Differential pressure sensor, suction pipe: Signal
2d29 Differential pressure sensor, suction pipe: plausibility
2d6d DME, internal error: control DME/DME2
2d6E DME digital motor electronics, internal failure: control actual torque??
2d6F DME, internal error: control air path
2d70 DME, internal error: monitoring engine functions
2d71 DME, internal error: monitoring input variable
2d72 DME digital motor electronics, internal failure: control hardware
2d74 DME, internal error: control fuel pressure sensor
2d75 DME digital motor electronics, internal failure: control motor speed
2d76 DME digital motor electronics, internal failure: control driver pedal module
2d77 DME, DME2: torque comparison
2dbF CAN, ACC: signal error
2dc1 Message from power module missing
2dcF CAN, control panel: signal error
2dd7 Message from DSC doesn't exist, timeout
2dd9 CAN, ARS: signal error
2ddA CAN, CAS: signal error
2ddb CAN, IHKA: signal error
2ddc Message from SZL is absent
2ddd Valvetronic message missing
2ddE Local-CAN communication
2dE6 Local-CAN, DME/DME2: communication

2E24 Ignition coil cyl. 1
2E25 Ignition coil cyl. 2
2E26 Ignition coil cyl. 3
2E27 Ignition coil cyl. 4
2E28 Ignition coil cyl. 5
2E29 Ignition coil cyl. 6
2E2A Spark coil cylinder 7
2E2b Spark coil cylinder 8
2E2c Ignition coil cylinder 9
2E2d Ignition coil cylinder 10
2E2E Ignition coil cylinder 11
2E2F Ignition coil cylinder 12
2E3c HDEV-control unit line 9, control
2E3d HDEV-control unit line 12, control
2E3E HDEV-control unit line 8, control
2E3F HDEV-control unit line 10, control
2E40 HDEV-control unit line 1, control
2E41 HDEV-control unit line 5, control
2E42 HDEV-control unit line 3, control
2E43 HDEV-control unit line 6, control
2E44 HDEV-control unit line 2, control
2E45 HDEV-control unit line 4, control
2E46 HDEV-control unit line 7, control
2E47 HDEV-control unit line 11, control
2E48 Booster high pressure injector 1
2E49 Booster high pressure injector 5
2E4A Booster high pressure injector 3
2E4b Booster high pressure injector 6

2E4c Booster high pressure injector 2
2E4d Booster high pressure injector 4
2E4E Booster high pressure injector 7
2E4F Booster high pressure injector 11
2E50 Booster high pressure injector 9
2E51 Booster high pressure injector 12
2E52 Booster high pressure injector 8
2E53 Booster high pressure injector 10
2E60 HDEV-control unit, internal error: communication
2E68 Knock sensor signal 1
2E69 Knock sensor signal 2
2E6A Knocking sensor signal 3
2E6E Ignition, control: firing time
2E6F Ignition 2, control: firing time
2E72 Control unit, internal failure: knock sensor module
2E73 Control unit, internal failure: knock sensor module
2E97 Generator
2E98 Generator, communication
2E99 Generator 2
2E9A Generator 2, communication
2E9F Oil condition sensor
2EE0 Coolant temperature sensor, Signal
2EE1 Coolant temperature sensor, plausibility
2EEA Temperature sensor radiator emission, signal
2EF4 Map thermostat, mechanics
2EF5 Map thermostat, input signal
2EFc Electric fan 2, Control
2EFE Electrical fan, input signal

2F08 Inlet air temperature sensor, signal
2F09 Inlet air temperature sensor, plausibility
2F0b Intake air temperature sensor: cold portion, plausibility (preliminary)
2F17 Engine oil temperature, temporary to high, EGS-Zwangsschaltung
2F44 EWS manipulation protection
2F45 Interface EWS-DME electronic vehicle immobilization/digital motor electronics
2F46 EWS variable code storage
2F4E Vehicle speed, signal
2F4F Vehicle speed, plausibility
2F50 Vehicle speed, plausibility
2F59 Start automatic, start signal
2F5A Start automatic control
2F62 Brake light switch
2F6c Exhaust fume flap, input signal
2F71 E-box-fan, input signal
2F77 Ambient pressure sensor, plausibility
2F78 DME, internal error: environment pressure sensor
2F7b Oil pressure switch, plausibility
2F80 Motor shutoff time, plausibility
2F8A Battery Voltage
2FA3 Coding missing

30Ac Injection valve cylinder 1, input signal
30Ad Injection valve cylinder 2, input signal
30AE Injection valve cylinder 3, input signal

30AF	Injection valve cylinder 4, input signal
30b0	Injection valve cylinder 5, input signal
30b1	Injection valve cylinder 6, input signal
30b2	Injection valve cylinder 7, control
30b3	Injection valve cylinder 8, control
30b4	Injector cylinder 9, control
30b5	Injector cylinder 10, control
30b6	Injector cylinder 11, control
30b7	Injector cylinder 12, control
30d4	Message from HDEV missing
30E8	Filling limit

cd87	PT-CAN communication failure
cd8b	Local-CAN communication failure
cdb7	Message (OBD-Sensor Diagnosis status, 5E0)
cdc7	PT-CAN communication failure
cdcb	Local-CAN communication failure
cddd	Message (gear data, BA)
cde0	Message (terminal state, 130)

Table 26

01	Relay electric Fuel pump
02	Idle speed control valve closing coil
03	Injector valve Cylinder 2
04	Injector valve Cylinder 4
12	Difference suction pipe
18	Ignition coil Cylinder 3
19	Ignition coil Cylinder 1
20	Injector valve Cylinder 1
24	Tank ventilation valve
25	Lambda probe heating
29	Air mass flow sensor
30	Relay Air conditioning compressor
33	Ignition coil Cylinder 4
34	Ignition coil Cylinder 2
36	Battery Voltage
40	CAN function EGS
43	Sensor
46	Lambda probe
49	Signal
51	Theft alarm system-PIN
52	Air condition
53	Switch Air Condition
0c	Throttle valve potentiometer
0F	Knock sensor 1
1d	Idle adjuster opening coil
1F	Injector valve Cylinder 3
2A	Knock sensor 2
2c	Sensor
2E	Electric fan
4c	Potentiometer
4d	Intake air temperatures
4E	Engine temperature
c8	Control unit self-test
c9	Fuel trim limit
cE	Knock regulation
d8	ASC-Signal
dc	Function
Ec	EGS-Signal

Table 27

64	Control Ignition Cylinder 1
65	Control Ignition Cylinder 2
66	Control Ignition Cylinder 3
67	Control Ignition Cylinder 4
68	Control Injector valve Cylinder 1
69	Control Injector valve Cylinder 2
70	Control Solenoid Valve suction tube (DISA)
71	Control Solenoid Valve Tank ventilation
72	Control Solenoid Valve suction jet pump
73	Control grid-controlled cooling
75	Control Idle adjuster

76 Control Lambda probe heating before KAT
77 Signal Throttle valve potentiometer
78 Signal air flow meter
79 Signal Intake air temperature
80 Signal CAN EGS
81 Request CAN EGS
82 Signal CAN IKE
83 Signal Speed
84 Reference voltage for air flow meter
85 Reference voltage for Throttle valve potentiometer
87 Signal Camshaft sensor
88 Signal Crankshaft sensor
89 Signal Knock sensor 1
90 Manipulation protection EWS
91 Misfire by Cylinder 1
92 Misfire by Cylinder 2
93 Misfire by Cylinder 3
94 Misfire by Cylinder 4
95 Control valve secondary air
96 Control Relay Secondary air pump
97 Secondary air system Plausibility
98 Self test E2PROM-Emulation
99 Control Lambda probe heating after KAT

6A Control Injector valve Cylinder 3
6b Control Injector valve Cylinder 4
6c Control electric fan
6E Control Air conditioning compressor
6F Control Relay Fuel pump
7A Signal cooling water temperature
7b Signal cooling water exit temperature
7c Battery Voltage main relay
7d Signal Lambda probe before KAT
7E Signal CAN ASC
7F Request CAN ASC
8A Signal Knock sensor 2
8b Signal Lambda probe after KAT
8c Interface DME – EWS
8d Lambda regulation control range block

Table 61

64 Control Ignition Cylinder 1
65 Control Ignition Cylinder 2
66 Control Ignition Cylinder 3
67 Control Ignition Cylinder 4
68 Control Injector valve Cylinder 1
69 Control Injector valve Cylinder 2
70 Control Solenoid Valve suction tube (DISA)
71 Control Solenoid Valve Tank ventilation
72 Control Solenoid Valve suction jet pump
73 Control grid-controlled cooling
75 Control Idle adjuster
76 Control Lambda probe heating before CAT
77 Signal Throttle valve potentiometer
78 Signal air flow meter
79 Signal Intake air temperature
80 Signal CAN EGS
81 Request CAN EGS
82 Signal CAN IKE
83 Signal Speed
84 Reference voltage for air flow meter
85 Reference voltage for Throttle valve potentiometer
87 Signal Camshaft sensor
88 Signal Crankshaft sensor
89 Signal Knock sensor 1
90 Manipulation protection EWS
91 Misfire by Cylinder 1
92 Misfire by Cylinder 2
93 Misfire by Cylinder 3
94 Misfire by Cylinder 4
95 Control valve secondary air
96 Control Relay Secondary air pump
97 Sekundaerluftsysstem Plausibilitaet
98 SG-Selbsttest E2PROM-Emulation
99 Control Lambda probe heating after CAT

6A Control Injector valve Cylinder 3
6b Control Injector valve Cylinder 4
6c Control electric fan
6E Control Air conditioning compressor
6F Control Relay Fuel pump
7A Signal cooling water temperature
7b Signal cooling water exit temperature
7c Battery Voltage main relay
7d Signal Lambda probe before KAT
7E Signal CAN ASC
7F Request CAN ASC
8A Signal Knock sensor 2
8b Signal Lambda probe after KAT

8c	Interface DME – EWS	**9F**	Aussetzer katschaedigend Zyl.4
8d	Lambda regulation control range block		
8E	Knock-regulation-self-test	**A0**	Aussetzer katschaedigend Summe
8F	Control unit self-test	**A5**	Katalysatorkonvertierung
9b	Aussetzer abgasrelevant Summe	**A6**	Periodendauer Lambda sonde vor Kat
9c	Aussetzer katschaedigend Zyl.1	**A9**	Heizleistung Sonde vor Kat
9d	Aussetzer katschaedigend Zyl.2	**AA**	Heizleistung Sonde nach Kat
9E	Aussetzer katschaedigend Zyl.3	**Ab**	Pruefung Kraftstoff Versorgung system

8. *Common Problems /Troubleshooting Guides*

E10 ERROR MESSAGE:

"**E**" means the car is not responding to the tool:

This often happens when the data line (also called "diagnostic bus") inside the car is "hung" or disabled. Occasionally the tool will display the message "E" followed by a number (most commonly 10 or 11) when an attempt is made to read codes or to reset the MIL light (Check Engine or Service Engine Soon)

Things to try to resolve the flashing "E":

1.) **Insertion Depth:**
Check the insertion depth of the connector. If it is not fully inserted the unit will not work.

2.) **Pin 19:**
Observe that pin 19 of the diagnostic connector is not recessed. A number of models in the early 1990s had pin 19 improperly installed.

3.) **Cycle power:**
Plug in tool, cycle the ignition key on and off two or three times (do not start engine)

4.) **Other warning lights:**
Observe that no other malfunction indicator lights are on. Often a malfunctioning module (i.e. DME, EGS/transmission, ABS traction control, etc...) can impair or "hang" the diagnostic bus.

5.) **Power resetting of all modules (entire car)**
Note: before doing this procedure, get your radio security code from the dealer.
   a.) Disconnect the main car battery.
   b.) Activate the emergency flasher lights (this will fully drain all power from all ECUs) wait 5 minutes

c.) Reconnect the main battery and try the tool again.

6.) Module Troubleshooting:

If you suspect a particular module is malfunctioning or damaged, you may wish to consult repair documentation for the car and attempt to isolate the problem by removing the module from the diagnostic bus.

WARNING: This procedure is for qualified mechanics only.

ABS service bulletin 34 01 96:
BMW circulated a service bulletin and low cost repair advice detailing the malfunction of the ABS unit ground wiring which caused diagnostic bus problems on a large number of BMWs. This is often the problem on BMWs built prior to 10/1994 that are getting the "E" message on the tool.

7.) Trying the tool on a similar BMW

If you have access to a similar BMW, you can rule out the tool as the source of the problem by trying it on that car. If it either reads or resets without the E message, then you can narrow your attention to the car.

The tool will not serve it's intended purpose if the diagnostic bus is impaired by a malfunctioning control module. If one of the modules is inhibiting communications it is necessary to visit a BMW dealer or qualified repair facility to diagnose and fix/replace the bad module.

9. *Sources of Technical Information:*

Central Letter Shop is BMWs official technical documentation distribution source. All Documentation relating to the service and maintenance of BMWs is available from them:
Internet Address: http://www.centrallettershop.com/
Phone 1-800-695-0079, or 973-808-8339

BMW: Pay-by-use technical information can be obtained online directly from BMW at http://www.bmwtis.com/

Manual Publishers
Robert Bentley Publishing: 1-800-423-4595
Alldata: 1-800-859-3282
Chiltons: 1-800-695-1214
Mitchells: 888-724-6742
Haynes: 1-800-442-9637

Recommended Reading:
• Bosch Automotive Handbook, by Robert Bosch, ISBN: 0837606144
• Bosch Fuel Injection and Engine Management, by Charles O. Probst. ISBN: 0837603005.

10. *Glossary:*

A/C	Air conditioner
ABS	Anti-lock Brake System
ASC	Skid control (see “Intervention”)
ADS	Aux Throttle Position Motor
AHK	Active Rear Axle Kinematics
BLS	Brake Light Switch
Check Engine Light	On the dashboard, indicates the DME has detected a problem
CC	Check control
CO	Carbon Monoxide
DDE	ECU for Diesel Engine
Diagnostic Connector	Where the tool plugs into the car.
Decimal	Numeric format the dealer diagnostic machines report codes in.
DISA	Intake runner length tuning mechanism
DME	Engine ECU (Gasoline engine)**:** monitors and controls all engine sensors and functions
DSC	Dynamic Stability Control
DWA	Alarm system
E	Communications error: See “Flashing E below
EGS	Electronic Automatic Transmission
EKAT	Electrically heated catalytic converter
EKM	Electronic Body Module
EML	Electronic Throttle Control
EVAP	Relates to fuel vapor recovery often this code indicates a loose gas cap
EWS	Drive away protection (alarm system)
Fault Code:	A “code” stored in the DME memory bank that indicates a past or present problem.
Fuel Trim	Adjustments to maintain proper air fuel ratio (see Lambda Control)
GM	General Module
Hex	The tool shows codes in a format called hexadecimal.
Intervention, MSR, ASC	Intervention is when another control unit (i.e. skid control) requests a power/torque change from the DME. Code indicates DME assessed the request as being incorrect or too long.
Lambda Control	Code means DME is unable to maintain requisite air/fuel ratio due to

	external factor (air leak, bad injector, sensor, etc...). (also see fuel trim)
LDP	Loss Diagnosis Pump
Load Calculation cross check (HFM vs. TPS)	When actual air flow exceeds +/- 25% of calculated air flow
MDK	Motorized Throttle Valve
MIL	Malfunction Indicator Lamp, also called the “Check Engine” or “Service Engine Soon lamp
MLF	Multi function Steering Wheel
MSR	Drag Torque Intervention (torque reduction for anti skid) see Intervention above
NTC	Coolant temperature sensor
Oil service & Inspection:	Also called Si (abbrev. For service interval) maintenance reminder lights
PWG	Pedal Sensor Potentiometer
QL	Idle air mass adaptation (see Fuel Trim)
R5/FCX:	The scan/reset tool. Subject of this manual
RAM	DME random access memory
ROM	DME program memory
Scan Tool:	Generic term for the R5/FCX
Service Engine Soon:	On the dashboard, indicates the DME has detected a problem.
SI	Service Interval
SMG	BMW Motorsport Sequential Gearbox
SRS	Airbag
TD	Tachometer Signal
TEV	Evap, fuel tank vent / purge valve
Ti Additive:	Idle fuel adaptation (see fuel trim)
Ti multiplicative:	Adaptation a percentage +/- of injector time (see Fuel Trim)
TR signal	From DME, RPM and valve position
VANOS	Adjustable Valve Train
VDS	Vehicle Description System. VIN Digits 4- 7
VIN	Vehicle identification number.
ZAB	See ASC
ZKE	Central Body Electronics

11. *Disclaimer:*

All information, illustrations, and specifications contained in this user manual were based on the latest information available at the time of printing. The right is reserved to make any changes at any time without obligation to notify any person or organization of such revisions or changes.

Furthermore, the manufacturer or its sales agents are not liable for errors contained herein or for incidental or consequential damages (including lost profits) in connection with the furnishing, performance or use of this material.

This user manual tells how to use this tool perform the required procedures on vehicles.

Safe and effective use of the tool is very much dependant on the user following the normal practices and procedures outline in this manual.

12. *Limited Warranty:*

This limited warranty cover defects in materials and workmanship for a period of twelve (12) months which begins from the date the product is purchased by the end user and is subjected to the following terms and conditions:

- Ø Within the warranty period, the manufacturer will repair or replace, at their options, any defective parts and return to the owner in good working condition.

- Ø Any repaired or replaced parts will be warranted for the balance of the original warranty or three months (3) months from the date of repair, whichever is longer.

- Ø This warranty only extends to the first owner and not assignable or transferable to any subsequent owner.

- Ø Cost of delivery charges incurred for the repair of the product to and from the manufacturer will be borne by the owner.

- Ø This limited warranty covers only those defects that arises as a result of normal use and does not cover those that arises as a result of:

    - Unauthorized modifications and repair.
    - Improper operation or misuse.
    - Accident or neglect such as dropping the unit onto hard surfaces.
    - Contact with water, rain or extreme humidity.
    - Contact with extreme heat.
    - Cables that have broken, bent contact pins or subject to extreme stress or wear.
    - Physical damage to the product surface including scratches, cracks or other damage to the display screen or other externally exposed parts.

13. *Limitations of Warranty:*

Other than the foregoing limited warranty, the manufacturer does not make any other warranty or condition of any kind, whether express or implied.

Any implied warranty of merchantability, or fitness for use shall be limited to the duration of the foregoing limited warranty.

Otherwise, the foregoing limited warranty is the owner's sole and exclusive remedy and is in lieu of all other warranties whether express or implied.

The manufacturer or any of its exclusive sales agents shall not be liable for any consequential or incidental damages or losses arising of the loss of uses of this product.

All warranty information, product features and specifications are subjected to change without prior notice.